

YOUR

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COMMODORE

Amiga
C64
PLUS 4
PC
C128

NIGHTBREED

Things that go bump in the night

• Lifestyles 2000 • Role Playing Games • Program Pullout ...

ISSN 0264-6277



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A gaule mist walked through the office. Rick noticed that his colleagues around him were acting in a peculiar manner. Their eyes were hollow and, if stared into, could be described as bottomless pits. He started to fret and shift uneasily in his seat, and the others started towards him. As they approached, their top lips drew back to reveal slithering gums full of small, sharp needles where their teeth had once been. Truly, it was the end...

...As just another day in the Year Cybernator office.

We arrive at another issue, another fun issue. Some computer magazine may be breaking exclusives this month, but none will have Nightlord.

This new Clive Barker Sim has been delayed until April 1990 (and so has the computer game from Ocean), but that doesn't stop us giving you a taste of what is to come - thanks to Steve Jones of *Spunkies* and, of course, Clive Barker himself.

But this is not the only money moved in your FUN FILLED SENSATIONAL BOARDWAY PC. We also have our pulpit programming section, a feature on Role-Playing Games with an editorial Round of the Shadow preview, A Lifestyle 2000 report, and no less than 15 pages of games reviews. As well as all your favorite regulars, surely we are the only complete Commodore magazine on the market.

I must dash now but if you're in the PC show on 27th September-1st October, drop by and we'll have a chat...

Rik Hinderson

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ABC

Quick on the draw

DOMARK, the company renowned for its license of Trivial Pursuit, the computer game, has done it again. The license grabbing team at Demark headquarters are set to launch the computer version of the hit game *Pictionary*.

If you haven't come across *Pictionary* where on Earth have you been living? It bears a certain resemblance to charades, but you are expected to draw the word for your team members rather than act it.

Micro Illusions - on their own

US based Micro Illusions is set to go on their own in the UK following a recent split from its UK distributor Activision.

After a couple of months uncertainty as to just who

was going to publish which product, Micro Illusions has announced that all of its products will be distributed in the UK by itself. Watch out for new titles with the Micro Illusions label in the near future.

Pictionary, the computer game, allows teams to either draw the words for their team members, or, if they don't feel up to it the computer can draw the words.

Pictionary should be out in September for the C64, PC and Amiga. Contact Demark on 01-768 2232 for more information.

Micro Illusions can be contacted on (0488) 496497.

Budget Blast-em

BONCASTER based Blue Ribbon is set to get your trigger finger twitching with its latest 2.99 C64 release - *Syntax*.

Armed with the latest cassette tape squaking on about you having to handle the latest impulse drive fighter you can't go far wrong.

If you're the sort of person who prides something that challenges your brain cells rather than your trigger finger then *H.Q. Quiz* may be right up your street. Also priced at 2.99, the game features questions on Sport, Entertainment and Geography.

Blue Ribbon can be contacted on (0302) 321134.



Above: Syntax - surely an error!



It's a joystick - honest!

WHEN the picture of Spectravideo's latest joystick fell out of the envelope it was greeted with cries of "What on Earth's that". With a styling that looks as though it would be more at home on the bridge of the new Starship Enterprise than the living room floor the QS-118 Wizardmaster appears to offer everything that the professional gamer requires.

The QS-118 features 3 different control mechanisms, push button (finger) and thumb control or two different stick levers, 2 fire buttons, auto fire and a computer system select switch.

Three versions of the Wizardmaster are available, the QS-118F priced at £11.95 is the one that works with the C64 and Amiga. Contact Spectravideo on (0235) 550455 for details.

Super Wonderboy is Dynamite

SOME game titles have obviously had hours spent on deciding on a title. Activision can't be blamed for the exciting title of Super Wonderboy, one of its latest coin-up conversions. Super Wonderboy is the second of Activision's wonderboy arcade licenses. The hero of the original game, launched way back in 1987, has now grown up and is called upon to defend the people of wonderland from a fire-breathing dragon.

Super Wonderboy features 11 levels, 18 different weapons, winged boots, various types of armour, different shields - everything a young hero could want.

Activision's second coin-up release is Dynamite Duo. Activision claims that we are in for a treat with the latest game around featuring cartoon style graphics, six levels, two bonus levels with extra battles on the 16 bit versions.

Watch out for these releases in September. Contact Activision on (0734) 313666 for more info.

New show for Capital

A NEW computer show is set for launch in London in November. The Computer Shopper Show will take place at Alexandra Palace from November 24 to 26. Well known companies already plotting to appear at the show include Evi-

cham, Postronics, Trilogic and Tycom. Commodore UK will be taking a major role with the "Wonderful World Of Commodore" described by the organisers as a "major exhibition in its own right within the Computer Shopper Show".

So if you're after pre-Christmas bargains get to Ally Pally in November.

PREVIEW



Above: Mystery of the Mummy - Rainbow Arts



Above: Dynamite Duo - The Legend of William Tell - Screen 7



Above: Fallen Angel - Screen 7



Above: Wild Dreams - Microcast



More from the
Amiga
By Burghard
Lehmann

AMIGA WORKBENCH

When thinking about what to write in this column, it just crossed my mind that I haven't so far touched the more astonishing things the Amiga can do, like its amazing graphics and sound capabilities. Maybe people would like in a column like this to hear more about how to get into programming these. (By the way, as I said in the first of this column, let me know about your interests and opinions!)

On the Amiga you have basically two ways of accessing the more powerful features of the machine. The first involves programming the hardware directly. If you are a machine code programmer, this is less difficult than you might think.

The second way, and the much better one to start with, is by making use of the many facilities the operating system offers you. That is, by using the library functions of the Amiga.

The libraries give you access to nearly all the advanced features of the Amiga, especially when it comes to graphics. You get most of what you want from the graphic library which includes some 93 functions. These allow you to draw lines, fill in spaces, animate objects and much more.

The graphics library also includes some text printing routines.

On the Amiga text is created just like any other graphics. The advantage of this is that text and graphics can be intermixed freely.

If you program in Basic, most of the advanced facilities of the Amiga are available to you in form of Basic commands. *Amiga Basic* from *Mikroware* is quite good in this way, once you get to know it. The only appalling thing about it is the editor. In my book the *Amiga Basic* editor ranks tops in the list of the worst programs ever written.

But the word is, that *Mikroware* is developing a new version of their Basic which will be bundled with *Workbench 1.4*, expected to get onto the market sometime next year.

Anything has to be an improvement on the appalling present editor. I only hope that *Microsoft* will indeed spend some considerable time on improving the editor and not concentrate all their time on developing fancy new Basic commands and then do the editor again on the quick!

Amiga Basic also allows you to use the Amiga libraries. This is one of its strongest features, even though I would advise you to consider changing to C or assembler if you want to use the libraries extensively and do serious programming.

the world of
iga
ard-Henry
mann

GA BENCH

AMIGA WORKBENCH ■

This brings me to my pet-hate, which is C.

C is supposed to be the language of the Amiga. Most of the examples given in the Amiga Reference Manuals, published by Addison Wesley, are given in C.

Unfortunately, C is expensive, and, considering the time it takes to compile and link a program in C, I can't see for the life of mine what the supposed time advantage in program development over assembler is to be!

I program in assembler, using the GenAsm assembler by JELsoft. Most programs I can execute almost immediately after I have written them and inspect the results of my efforts. Even if I break a large program down into modules and have to link them, I can look at the fruits of my labour far sooner than with C!

At this point a spot of advice to assembler programmers: Even if you have an assembler that can use the *Amiga Include* files, don't use them! It takes far too long for the assembler to assemble all the include files which are needed from disk. Sometimes your source needs only one or two variables out of hundreds in a complete include file.

Instead, type the library offsets and other symbols equals your source needs at the beginning of the source file in yourself. This is initially a bit more work, but once you have done this, you can use most of it over and over again by just merging them into any new source file you are writing - that is, if your assembler has got a merging facility, which it surely has, if it allows you to use include files... This additional work pays off handsomely in having your source files assembled in next to no time.

If you program in C, you have no other choice but to use the include files. This is why compiling a C program can be such a long drawn out process.

At this point some of you might inquire, what on earth include files are.

Include files are simply lists of system variables compiled by Commodore in order to make life supposedly easier for C and assembler programmers. On other machines you have to compile these offsets and variables yourself from books and manuals. The include files, which come with every C-compiler and with most assemblers, make it unnecessary for you to type these things in yourself. And, as I've said, C-compilers depend upon include files.

There are two types of include file: The I-include files for C-compilers and the b-include files for assemblers. All include files are categorised by the Amiga libraries. E.g. there is an include file for the Exec library, one for the Intuition library and so on.

If you want to have a look at an include file, simply use the "type" command from CLI or load the include file into Ed, the CLI editor, or any wordprocessor.

Amiga Basic also requires include files if you want to use libraries and devices from it. Unfortunately, Amiga Basic can't do with either the I-include files nor the b-include files. It needs special include files, called "bnapis". There is a program on the Extras disk which converts any include file into a bnapis-file which can be used by Amiga Basic.

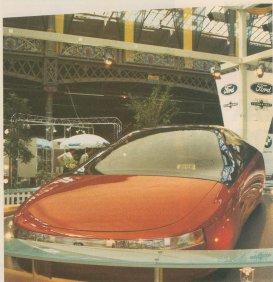
Finally, programming the Amiga hardware directly is, as I said, easier than you might think. What you do here simply is you write certain values into certain fixed locations. These are the registers of the special chips of the Amiga. This is very similar to programming. Let's say, the *SND* sound chip on the Commodore 64.

Most of the information you'll need for that you'll find in the *Amiga Hardware Reference Manual* published by Addison Wesley. For people who are into machine code programming, this is the easiest to digest of the four massive reference manuals.

Even better, especially if you want lots of example programs in assembler, is the *Amiga System Programmer's Guide* published by Akamai. And then, I may tell you, there will very soon be a book on this subject on the market, written by yours truly and published by Dado Press in England.

If you ever want to program the Amiga hardware directly, you have to be aware that the Amiga is a multitasking machine. Therefore, you can't program the Amiga as if you've got the whole machine to yourself. Whatever memory your program needs you have to allocate using the functions provided by Exec. If you program the hardware directly, very often it is a good idea to briefly suspend multitasking by using the *Exec Forbid* library function.

Always remember to switch multitasking on again with the *Exec Permit* function and, when you are done, to free the memory you have allocated for your program. Otherwise it isn't fair to other programs!



Above: The Probe X, I want and

FUTURE SHO

**Rik Henderson visits
The Daily Express Lifestyles 2000, and is thrust
forward in time to sample
a taste of the future.**

**Photography by Frane
Maroevic**

Although *Lifestyles 2000* was hyped in just about every form of media, I really did not know what sort of show to expect. I knew that there would be many companies jostling to grab the punters' attention, but how much were they going to express the idea of life in the year 2000? Not much was the answer I came up with. But does that stop one from enjoying oneself, not bloody likely.

There were many stands, the majority of which being larger than an average one bedroom flat, although whoever came up with the idea of placing Sky TV next to BS2 had better think a little for the next show – and a next show there will undoubtedly be.

We (my photographer pal, Frane, and myself) meandered into Olympia with our knees knocking (well, pretty pressing the doorbell) with anticipation, when our eyes popped out and our tongues rolled to the floor; for there in front of us was the fair.

Once our palates had been christened with the beer of the year 2000, we set about to unearth some world shattering exclusives. Our first stop was the rather splendid Ford stand, with its car of the future the Probe V. A very slick car indeed and one to be sure in. It has actually been heralded as more aerodynamically efficient than a super-sonic F15 military jet fighter. It's swap it for my Raleigh Winner anytime.

We then strolled off to the Network Southeast carbank of a stand – after we'd broken out of the trance that the Probe V had placed us in – which was a lot better inside than out. It presented an accurate representation of what commuters – myself included – will be travelling on in the early nineties. It was very nice too, with digitised displays presenting time, destination, and current stop (this is in the first class section), as well as individual light switches for each passenger. The only problem I have with this is that the first time these trains will be installed on will be the Chiltern line; I wonder how long the T7 vehicles planned for delivery in late 1999 will last?

On our way to move fan and future hopes we passed the *Butler* stand, and on a hot day, such as it was, the prospect of a free drink was a pleasant one to say the least. "But it's got no alcohol in it!" exclaimed Frane, oh what a chaotic we had.

The BS2 stand was far more extravagant than the one accommodating SKY, but then it had to be because of BS2's failure to release a satellite dish that week. They were even giving away free badges of course, digitised on a minimal video camera. Naturally I went back a second time, there's nothing better than having something (or two) to remember the show with, even if they make you look a complete dipstick. But again, I do not see how this links into the theme of the year 2000.

The most impressive stand of all must go to *Tomorrow's World*, their stand was so large that they had constructed a complete studio in the centre. Around the studio were lots of small exhibits, featuring inventions and gadgetry that had been displayed on the show at one point. An honourable mention must go to the light drums, this provided hours of endless laughter (or at least a few minutes) watching people trying to hit objects that they could not see. Practical? Not on your nelly, not far from anyway. We watched an upstate of TW being made with the public controlling all aspects of the production, one would hardly tell the difference between this and the real version.

The ultimate part of the show, for me, was the fashion show. To send you into the mood of actually looking at the clothes and not the pretty girls parading them, the escapee had a theme, "It's the year 2000, the scene layer has been destroyed, the green house effect is total" was the scenario, but honestly



Above: Rik Henderson in a rather particular aircraft.

OCK

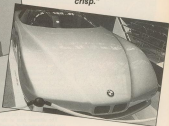
YOUR COMMODORE

Eleven

Before it that's a model. I wouldn't mind sticking it together!



"I don't really see how a pair of cycling shorts and a rather flimsy top will stop you being fried to a crisp."



I don't really see how a pair of cycling shorts and a rather flimsy top will stop you being fried to a crisp. Oh well, the girls were pretty.

They must of been dying in the boiler suits that they had to wear for part of it, the whole exhibition was baking hot, and Franc and myself welcomed every chance we could get to have a rest. Fortunately we had plenty of chances, and therefore experienced a wonderful time.

Maybe *12 Monkeys 2000* wasn't quite the right title for such an exhibition - I would have liked to have seen a little more futuristic equipment, in preference to a bubbly spa bath - but for all out enjoyment you cannot fault it. Franc had a great time too, and even walked away with a radio cap as a prize (photographers nowadays, huh).

Also missing was an in-depth look at the essential environmental issues - far more important for the year 2000 than satellite television - although *Footprints of the Earth* were there, just not in force.

GETTING OVER PHOBIA

Rik Henderson not so
much grills Tony
Crowther, but bases him
slowly on gas mark 4.
Well marinated of
course.

On Monday 17th June I was bundled in the back of the new Cookamobile with the sole intention of interviewing a certain Tony Crowther. But to my surprise – when I was let out of the sack of course – Sheffield had far more to offer than anticipated.

To say Tony is dedicated to his profession would be an understatement. His life revolves around programming, and now that he seems to be flavour of the month at Microsoft, his future is looking very bright indeed. However, his past hasn't exactly been a failure. If one was to list all of his published games, that would take up pages alone, but everyone would recognise at least one of them – *Monkey Made for instance*. Having recently finished all the conversions of *Phobia* (22) to *Amiga*, *Amiga* and a *VC SURESHOT*, he is to embark on an enormous project which is to last eight to nine months.

The new game is currently carrying the working title of *Federation War*, although Tony mentions that this is very likely to change. It is unlike any other Crowther game in the respect that it has a Role Playing theme – although not in the world of *Bards Tale*, *Alternative Reality* etc. – and it will be fairly complex in gameplay.

INTERVIEW ■

Based very loosely on the plot of *Star Wars*, you play the part of an evil commander (not unlike Darth Vader) and you must clear a planet from rebels who do not wish to comply with the Federation. Once this task has been completed you can turn on your superiors and try to take over the Federation base (not unlike the Death Star).

All this is done using a rather new graphical style. The map on which the action takes place is seen in a top down view, although everything is heavily 3D. Columns, walls and other landscape features (such as a waterfall) rise out of the darkness below towards the screen, and you can zoom down to see the floor. All the graphics are very well drawn, which is not surprising as Tony is at heart an artist, and he has recently programmed himself an easy to use Amiga Sprite Designer.

PERSONALITY PROFILE

Name: Tony 'Bat' Croucher

Age: About 24

Favourite Computer: Amiga

Favourite Software Company: Microsoft (mainly)

Favourite Films: *Backpack*, Pink Floyd's *The Wall*, *The Last Seafighter*, Any Schwarzenegger movie

Favourite TV Show: *L.A. Law*

Favourite Books: *5550 Manual*, *More Art Books*

Favourite Food: Lisa's Cooking (yawn)

Favourite Records: Anything by Iron Maiden

Favourite Sports: Cycling, Soccer on TV

Favourite Papers: *The Treader* because it comes free through the post

Favourite Magazines: Any with good reviews of Commodore games

Worst Computer: Spectrum

Worst Computer Games: Any games that rip off an existing one

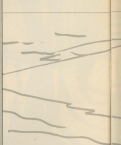
Worst TV Show: *Neighbours*

Likes: Programming

Dislikes: Lisa in a bad mood, Crip games, Not being able to drive

Other Hobbies: Racing (Art)

"All the graphics are very well drawn, which is not surprising as Tony is at heart an artist..."



YOUR COMMODORE

Desert Islands Disks

I asked Tony that if he could have a computer - he requested an Amiga and a good 750 power supply whilst stranded on a desert island, but was fairly allowed to bring along ten pieces of software, what would he take?

Assemble

"This would indicate the need for any other utilities or word program my self, I don't like using other people's utilities systems."

Dropout Master

"I was so impressed in DM that when I faced the board, and couldn't get past him, I phoned IFL in America and asked them for help. Since then I've completed *Chess Strikes Back* - working for Microsoft does have its advantages."

Nebula

"A very good game, possibly swayed by the fact that I received a free copy."

Shadowgate

"Although this was my least favourite of the Mindscape games, it deserves a mention because I completed it in a day. David Bishop and I collaborated over the phone, proving the old adage 'Two heads are better than one'."

Shanghai

"I often play this with Lisa (his wife). It is one of the few games she enjoys."

Emerald Mines 1 + 2

"I'll count these as one game, because I've got them both on one disk. I can't remember if they are called *Emerald Mines* or not, but I think they're better than *Boulderdash*, although almost clones."

Bombard

"Okay, so it's my own game. I still play it often, it reminds me of all the hours I spent designing the screens. A lot of thought went into the laser ones."

Giant Sistas

"A silly little game, but fun none-the-less."

Sargass

"A sick game and very enjoyable. It's a shame though, my disk has gone corrupt."

Any Infocom Adventure

"I have completed *Zork One*, but the Infocom adventures are easily my favourite games of all time. I prefer games that require a lot of thought."

And so we left Tony (the Crowther household) and visited my favourite part of Sheffield. The Pub. *Compuserficionados* must also go to the *Crowthers* as only three days after the interview *Mr Crowther* gave birth to a bouncing baby girl, Sarah Anne Crowther.

■ PC CORNER

Dear PC Corner,

I am writing to profess my thanks for the recent inclusion in your magazine of the Commodore PC's feature; and to inquire as to whether you may possibly be able to assist me with a few queries I have.

I recently decided to pursue a series of studies with the Open University. Armed with my trusty C64 I set about enquiring about the O.U. Information Technology course. Unfortunately I found that my C64 was not suitable for the course as it is not IBM compatible. The O.U. stipulate that the machine used for the course should use MS-DOS and have a minimum 512K RAM.

I therefore began to check out my local vendors. I soon discovered that I could get hold of a Commodore PC1, which I did. Okay, so I now have a machine matching the O.U.'s criteria, albeit a very basic one. Some time in the future I would dearly like to beef it up. I went back to the vendor and asked my questions of a blank-faced branch manager, and more than 2 weeks later I am still awaiting some form of written reply!

As I purchased a very basic PC, I am aware that I can increase memory on the motherboard up to 640K, however, with some commercially available software requiring upwards of 1Mg, obviously 640K is insufficient. I would like to add more. I asked therefore, with the present configuration of my machine, is it possible to add a hard card, and if so, how would I go about it? In the future of time, and as funds become available, I would also like to add other facilities such as a modem card and a fax card. Again I was met with a blank stare and "Give me your name and address, I'll consult our technical people and come back to you". Some two weeks later, I again visited the shop "No answers yet", and the same blank stare. Then I asked if I could upgrade the CGA card from the PC1 and replace it with an EGA card, or even a VGA card. I'm currently awaiting an answer from their "Technical People" on that too!

As the PC1 is an IBM clone, I assumed that there'd be very little or no problem with what I want to do, but I would like an authoritative yes or no before I commit my precious finances.

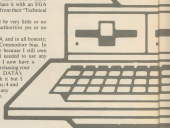
I bought Four Commodore whilst I was using my C64, and in all honesty, have been currently looking for a PC magazine with a Commodore bias. In fact, I purchased the August 89 edition of the magazine because I still own my C64, and I wanted to study the listings to see if I needed to use any of them, when I ventured across your PC feature. As I now have a PC1 and a C64, I now have twice the reason to continue purchasing your publication. When I purchased the PC1, I got Concept DATA's ABLE 1 software and GW Basic that was bundled with it but I am curious as to whether or not, as with the C64, the Plus/4 and the C128, you provide listings in the magazine; are there any plans to include a similar facility for the PC's either in GW Basic or in any of the other languages available with these machines?

Albair Ian McCall, Thornaby-on-Tees.

Dear Albair,

The problem of trying to get information about a computer from a sales man is an old, old story. You don't say exactly where you purchased your PC1 but I'm betting that it was from a male stream high street dealer. In my opinion the after sales help/service provided by many larger shops is simply atrocious, once they've got your money they simply want to give you your nice new

Got a floppy
hard drive? Our
PC Specialist can
your PC pro



PC CO

copy disk? A
Our resident
st can nurse
problems

package and watch you disappear into the distance. I have found that you can get much better help if you purchase computers, peripherals etc. if you go to a local computer dealer. OK so they may not be able to offer you all of those wonderful deals that you get on the high street but they are far more likely to be willing to offer you advice in the long term.

That's enough of me griping on, now for your queries. A hard card can be fitted to your PCI. Addons in Southampton produce one that is suitable. Addons can be contacted on (0703) 828282.

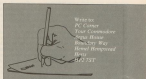
Any PC standard modem and fax card can be plugged into the expansion bus as necessary.

Now for the video cards, replacing the CGA card involves disabling the onboard video by switching on switch 4 as detailed in the user manual, page 1/3. Your new video card will need to be placed in the expansion bus also.

Unfortunately you only have three available so it's your decision which board you choose to use.

Your Commodore has prided itself on the quality of its listings for many years. As Commodore ventures into new computers it is the magazines' intention to move with them. Thus, yes we do intend to produce PC programming features and listings. However, while we have a large number of C64, Plus/4 and C128 programs arriving on our doorstep our day we have never had any for the PC. So come on out there if you are into the PC and would like to write programming features or have produced a program that you think will be of interest to other readers of Your Commodore, get in touch!

PC Corner is designed to be your forum in the World of Commodore PCs. If you have any opinions that you would like to share, questions that you would like to see answered, or simply ideas for articles then do write to us. Without your help we can't make this column work.



Due to the pressures of getting a magazine out each month we can only answer queries through this column and cannot answer them on an individual basis.

PC CORNER

WOT NO

**Intergalactic layabout
Alex Bardy explores the
enormous world of Role
Playing Games.**

Explain the basic principles of a role-playing game (RPG) to the average 'man in the street' and opinions tend to be varied, some are plain mystified ("a boardgame without a board?"), while others find it quite fascinating ("the best thing since sliced bread and...erm...monopoly"). Truth be told, RPGs have been around for well nigh 15 years now, and probably an awful lot more if people had truly recognised it in times long passed; originally considered a direct descendant of the wargame, these past two or three years have seen the role-playing game become something of an artform among certain 'factions'. 'The Hobby' has grown immensely in popularity in recent years, commensurate with the comic and computer games industries actually - and the key to all this growth? Quite simply, creativity and leisure. And nowhere are these two factors more in evidence (or indeed, more important) than in a role-playing game...

The very idea of taking on the role of somebody else (much like an actor or actress in an award-winning oojamafflip) opens up a world of possibilities for the individual, but when that role can be anything from an alien to a superhero, a cowboy to a 19th century explorer, or a human to a fantastic creature of myth, that world of possibilities becomes all the more inviting, and there are usually three or four of you all playing such varied roles - that's what makes an RPG that little bit extra special.

Given a competent Gamemaster (GM) - the person who 'runs' the game - a role-playing session can literally last for hours and hours (all fun once at that!). The major difference between your everyday comic or computer adventure game and a role-playing session lies in the flexibility of the game - even the largest computer running the largest adventure game has a finite number of branches and/or endings. Not so with a role-playing game, which can (theoretically) run forever, while still continuously varying; the 'limits' of an RPG are classically defined as "the GM's imagination and leisure time", and that's about as accurate as you can get without doing a wobble over the philosophical/metaphysical possibilities, etc.

Some of the most popular RPGs currently available include:

DUNGEONS & DRAGONS (D&D)/ADVANCED DUNGEONS & DRAGONS (AD&D) - the grandfather of them all, D&D is still very popular even today, not least because of the huge amount of support material available for the system. For those who don't know (and haven't guessed), D&D is a fantasy-orientated game with elves, fairies, axes, and yea, dragons too - all making up a colourful and dangerous backdrop for adventure.

TRAVELLER/MEGATRAVELLER - another 'oldie' although this time the backdrop is a huge universe of galaxy-hopping travellers. Laser rifles, giant spaceports, and loads of technological marvels abound in this game, and support material (sourcebooks, scenarios, etc.) is extensive to say the least.

CALL OF CTHULHU (CoC) - the first of the new breed of RPGs, CoC is an RPG tied not so much to a particular game as to a particular world (or more accurately, to the 'worlds' of a particular author). The gamesman in question is one Howard Phillips Lovecraft, a nihilistic author of early 20th



Above: Book him
Daniel

"The very idea of taking on the role of somebody else (much like an actor or actress in an award-winning oojamafflip) opens up a world of possibilities..."

BOARD



Alas... I wasn't even born yet, actually!

century, his stories tell of some of the nastiest monsters you could never wish to meet, and he linked together two mythical worlds of such centuries (The Dunsanian Tales and The Cthulhu Mythos respectively).

The Call of Cthulhu RPG was originally based on Lovecraft's Mythos tales, but the game system has since been expanded to cover nearly all his works. Support material, once again, is generous. Recommended.

TWILIGHT: 1900 and 1900AD - two RPGs (loosely) set around our own Mother Earth, the former is one of the very few post-holocaust RPGs currently available, while the latter is set in - surprise, surprise - the year 1900 - a time when several powers (notably French, American, and Chinese) have achieved space travel, and colonised planets around the galaxy. Both these games are well supported, and as an ardent fan of 1900AD, the latter comes highly recommended.

MARVEL SUPERHEROES and DC HEROES - both of these games (licensed by Marvel and DC Comics respectively) allow prospective players the chance to don fancy dress, mask, and all-important tights, and to go around leaping tall buildings and levelling blocks with single blows, etc. Great fun for all, and support material isn't thin on the ground for either game...

JOURNE - a truly different RPG this, it's a sort of science-fantasy game set in a world where magic and science become one and the same. The game has been around for quite some time, and has something of a token following at present, it seems to be becoming increasingly popular though.

Set in its own world, *Journe* has an awful lot going for it, the complete 'alien-ness' of the world it's set in is just the first of many pluses. Unfortunately, there's very little support material for the game, and it looks set to stay something of a cult game rather than anything else.

BATTLETECH - this 'RPG' started life as a wargame and, after almost 5 years, has recently become extremely popular with the masses. The game revolves around huge metallic beasts (much like those Transformers you see in the TV ads) beating the hell out of each other across all kinds of terrain. Fun while it lasts, the game has been given tremendous support (indeed, over the last few years no other game has matched it for the sheer volume of material that's become available).

GURPS - GURPS (Generic Universal Role-Playing System) is an attempt to make an as every general roleplaying - the game system has been designed in such a manner that you can use it for all settings, be they fantasy, SF, cartoons, espionage, or whatever. It's an experiment that's proven very successful, and currently available are sourcebooks (with extra rules, etc.) for all types of RPG, and even particular authors - there are books specifically covering Andre Norton's WITCH WORLD thingy and Alan Dean Foster's books for example.

SPACE: 1889 (1889) - one of the newest RPGs to be released, it covers a kind of pseudo-historical 19th century where a guy called Thomas Edison has discovered space travel, and people like H G Wells and Jules Verne are most certainly not crazy. Venus, Mars, and the Moon are also inhabited (by lizardmen, martians, and scientists respectively). Oh, and lasers, the atom, fusion / fission, etc. haven't been discovered yet - if it all sounds a bit unusual, that's because it is, for it's a marvel of game design, and plays extremely well to boot! And all the Victorian 'dressing' does nothing but enhance the game's overall effect on the players. Support material is limited at the moment, but things seem to be picking up in this direction now. 1889 is my personal fave of the bunch at the moment but I'm sure I'll get over it soon, promise...

HOUND OF THE SHADOW

Those familiar with the 'Call of Cthulhu' role-playing game will recognise the theme behind Electronic Arts latest computerised role-playing adventure. Having a distinct Cthulhu Mythos flavour, it is based in London in the rip-roaring 1920s - and we can be assured that there is more than a tad of horror involved.

The first task to be performed, as in the RPG, is to create a character. This is done very impressively, using mood graphics to the maximum effect. You can be male or female - this is your first choice - American or British, and you can choose from numerous professions. Not only are these characteristics involved (you do not get to set them, only sentences on what sort of person you are) the skill system is enormous.

There are many skills which you possess, but they are all set at an average level. Once you have determined how experienced your character is to be - via age, etc - you get to raise some skills a little, in order to be more adept at certain tasks.



Right: The real nice being grabbed by the ghoulies.



Left: What's this I spy, well blow the doors its a pub.

The gameplay itself is rather like a text adventure, although graphics are well distributed throughout. The difference between this and, say an Infocom adventure, is that *The Hound of the Shadow* is completely interactive. Depending on how proficient you are at certain skills, different text will come up at some sections. Every little feature that your character has, which makes him/her an individual, has an effect on the play, although it is possible to complete the game with any sort of character.

The parser is not enormous, nor is it overly complex, but this is not a programming error, it is in fact a feature. The parser is very simple to use indeed. This saves you the hassle of having to find the correct words to key into the computer in order to complete a simple logic problem.

Unlike most other adventures (which describes *The Hound of the Shadow* perfectly), this game goes not rely on objects to build a complex clue pattern. Instead people are the order of the day, provoking you to take more active role in what goes on around you, and allows you to slip into your character easily.

Every action undertaken saps away time, which is important to the plot. The timeline is a very important feature. This is to be virgently adhered to otherwise the Hound, for it is after you or your friend, will rip you to shreds in typical H. P. Lovecraft traditions.

The graphics are very moody, painted in a duo-tone style in a crumbly colour of beige/brown - much like those older photographs found in everybody's attic. The game text changes every time it is played with another character, and there are many, many small features added which make the game seem a little more personal to the particular character involved.

Although *The Hound of the Shadow* is not in the Bard's Tale mould, it is in every way as much an RPG, if not more so. The interaction level is superb, and rumour has it that if this is a success, more will follow with the ability to use your previous character(s).

Rob Henderson

A SHEEP IN WOLF'S CLOTHING

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Also included as first prize are the two new Lone Wolf novels (signed of course). Four second prize winners receive the two signed books.

What you have to do is study the photograph to the right and think of some speech bubbles for what you think may have been said - the sillier the better.

Write them on the back of a postcard, or sealed envelope, and send them to:

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The Rules

Entries will not be accepted from employees of Argus Specialist Publications, or Audiogenic. This restriction also applies to employees families and agents of the companies.

The entry restrictions form part of the rules and the Editor's decision is final. No correspondence will be entered into. In the event of a postal strike, we reserve the right to extend the closing date.

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BIG WOBBLY COMPO
BIG WOBBLY COMPO
BIG WOBBLY COMPO

A woman with dark, curly hair is shown from the chest up, looking back over her right shoulder towards the camera. She is wearing a red shirt with dark blue polka dots. Her right hand is resting on a dark, vertical wooden post on the left side of the frame. The background is dark and out of focus, with some light reflecting off a surface behind her. The overall mood is mysterious and dramatic.

BREEDING NIGHTMARES

Clive Barker's new film has a dark fantasy theme. Dave Hughes and Alex Blair talk to him on a very frantic, very elaborate, Pinewood set.

Photography by Murray Close

Clive Barker, although a prize-winning and highly-acclaimed horror writer, playwright, critic and general mast-of-the-moment among horror fans, is it without a doubt the film **HELLRAISER** for which he has earned himself most notoriety. A brilliant, stylish, complex collage of ideas, images, brutality, sexuality and death, **HELLRAISER** was Clive's directorial debut, a film made on a shoestring budget which has become the horror movie of the Eighties, establishing its central bad-guy, the Cenobites, as the new Freddy Krueger. Michael Myers and Jason Voorhees. A sequel has already been released in the UK, although Clive himself merely oversees the making of the movie, and there are plans for a third. Now Clive is working with a big budget, at a big studio, with big names and big ideas. As he told me on the set of the new picture, **NIGHTBREED**, "HELLRAISER was a little horror movie; this is a big fantasy movie. **HELLRAISER** was one house in Cricklewood; this is five sound stages at Pinewood Studios."

NIGHTBREED is based on one of Clive's own novels, **CABAL**. It follows the story of Boone, an innocent but mixed-up man convinced by his psychotic psychiatrist, Decker, that he is a multiple murderer. Fleeing the authorities, Boone discovers a lost city wherein reside all the rejected horrors of the earth and, having unintentionally lead his pursuers to the city, fights to save it from those who would destroy that which they don't understand... It is written by Clive Barker and stars **THE FLY**, **VIDEODROME** and **DEAD RINGERS** director David Cronenberg and **HILL STREET BLUES** star Charles Hall. Clive says it is "much more than a horror movie", describing it as having "more heart, less red meat" than his earlier films. A dark fantasy movie, then? "Absolutely," says Clive. "There is a large action element to it, and no movie that stars David Cronenberg can be entirely safe for minors."

The set itself is a mixed bag, played as it is between the famous 607 sound stage and the top secret **BATMAN** set. Canadian police cars and trucks litter the exterior locations, where Clive delightfully points out the exact spot of waste ground where one of Decker's more heinous crimes is committed (sorry, this is a family magazine). Impressive enough is the unfathomably high wall of the city, Midian, which has been breached by the Sheriff (Charles Hall) and his men as I write. Talk is of a major scene involving a crushing juggernaut, which involves some testing special effects, and Clive's air is of excited anxiety. Inside, elsewhere in the sprawling Buckinghamshire studios, the place is infested with every grotesque imaginable. **NIGHTBREED** is said to contain over two hundred separate monsters, with **HELLRAISER** special effects team Image Animation once more providing some astounding rituals and, working closely with Clive, ideas for the monsters themselves. I am asked if I am available to be another monster (they are rather short on extras at make-up...) - in fact, Goran Software's Gary Boney has already been roped in to play one of them during his research for the forthcoming computer game - but I decline and watch instead as Clive goes through the motions for another scene, before wrapping and sparing me some time over lunch for a chat.

His attitude is very clearly different to this film: he knows his finances will be watching closely, and it is important that the film does good business both here and in the States. Boone, box-office successes in the fantasy genre (including **INDIANA JONES AND THE LAST CRUSADE**, **BATMAN** (see my article last issue) and **GHOSTBUSTERS II**) suggest that he hasn't too many worries. Two minutes of sheer bloodlet were cut from **HELLRAISER II**, and Clive seems unconsciously aware that his movie-making must mature, or at least change. "I've never thought it was that important to advance," he says, "but it is important to change, to do something different all the time."

Emphasis this time around is very much on characterisation, particularly of the four lead roles: Boone, his girlfriend Lori, Decker and the Sheriff. "It is scary, but its major scenes come from genuinely caring about the people who are involved in that situation. I don't think the audience is gonna come out of this movie feeling detached about the characters, in the same way that they were detached from the **HELLRAISER** characters. **HELLRAISER** was a very cold picture; you couldn't really care for the characters." I ask him if working with David Cronenberg led Clive's own vision of the movie, but he demurs. **NIGHTBREED**, he says is not Cronenberg's style. "His vision is much grimmer than anything in this picture, and although this is a dark picture in some respects, it is dark in a completely different way to the way he is dark. But it was wonderful to have him in the picture, partly because he is a hero of mine and partly because it was his first chance to do this. It's a massive role, and I think it comes across on the screen."





The latest news on the movie is that another six weeks* of filming is to begin at Pinewood, with Ralph McQuarrie (who designed much of the alien fauna of the STAR WARS movies) overseeing the ranks of the NIGHTBREED. More monsters are lined up, although a rumoured three-hour roughcut has yet to be edited down to a more manageable two hours' worth, and although scheduled for release at Christmas of this year, the UK release is now to be moved next Summer. In the meantime, Barker addicts can read his new bestseller THE GREAT AND SECRET SHOW (the first of The Art trilogy) and look forward to the sequel to CABAL, which, Clive says, will probably be turned into the NIGHTBREED sequel, HELLRAISER II (screenwriter Peter Atkins' script for HELLRAISER III has been accepted), and Clive is already looking at a screenplay for another of his stories, this time SON OF CELLULOID, which appeared in both the BOOKS OF BLOOD and my own magazine, SKELETON CREW.

For Clive Barker, obviously, darkness is not an obstacle, but big business, the tapping of which is clearly his Art.

NIGHTBREED - THE GAME

Clive Barker's new film *Nightbreed* is to be produced by film license supremos, Ocean Software. This can only be judged as another brilliant marketing move by the company responsible for the *Batman* comic game (another superb license deal).

The game is to follow the plot of the film very closely (as contacts have told me of

which Ocean is a world expert, due to the fact that its Public Relations manager was asked to make his screen debut as one of the *Nightbreed*).

Apparently, Clive Barker himself had a reasonable input into the game design, thus making it very accurate on the detail side. We have also been informed that it is to be more of an arcade game than anything

else.

As already explained in the main feature (what do you mean you haven't read it yet?), the plot of the film involves a character named Boone, who has been wrongly adjudged to have murdered somebody. Thus he goes on the run.

Unfortunately he runs too far, into the city of Millan - a land full of various nasties, the *Night-*

breed. Here he starts to change himself, into one of the said creatures, and then it gets juicy.

Now that the movie has been rescheduled for an February release, the game has followed suit. It will be available on the Amiga and C64, and you can bet that it'll be every bit as horrific as its cinematic counterpart.

Kit Henderson.

"Ocean software's Gary Bracey has already been roped in to play one of them (the Nightbreed)..."



■ 128 CORNER

Dear 128 Corner,

Congratulations on the new C128 Corner. The article is a great idea, I hope it is a success. Here are a few hints and tips for you.

For a secret message from your 128 enter: SY5321888, 123, 45,6

PO8E4784, 9: PO8E54785, 258 will increase the size of characters on 80 col. screens (may not work on all versions of 128).

1281 partitions can be accessed from *Forevermore 128* by sending the disk command: /partitions name.

When using *Micro Clerk 128*, pop-up menus can be moved around the screen using the TAB key.

Graphics created on *CADPAK 128*'s second screen can be used with *Forevermore* by loading them into the converter as a hi-res picture.

I hope that these will be of some use to you.

P. Traynor, Warrington, Cheshire.

Dear 128 Corner

I am looking forward to reading articles about the C128 in the new 128 Corner. The following questions may be of interest to other readers, in addition to myself.

What *Vista* Software is available for the C128 for Word Processing, Database and Spreadsheets.

What officially does CP/M stand for. And what range of software can one use and is available.

Is it possible to switch from the C64 mode to the C128 mode and vice versa with a cartridge installed without damaging your computer.

I look forward to your reply in the pages of YC.

J. Bradley, Lanarkshire, Scotland.

Two *Vista* products were launched for the C128. The first of these was *Vista Classic*, a very powerful wordprocessor and a favourite in the office. The second program is *Vista Star*. This program offers both database and spreadsheet functions, while not as pretty or friendly as *Vista Classic* it is still a very powerful program. By Financial Systems Software if you are trying to track these down.

CP/M stands for Control Program for Microcomputers. Basically it was the first name for MS-DOS and the version of CP/M found on many IBM compatible CP/M allowed programs written to be run on a variety of computers.

There is a large number of CP/M software available - mostly professional/business applications, unfortunately there is too much to list here.

If you want to investigate CP/M software further we suggest you take a look at the CP/M Kit and the CP/M Users guide. Both of these are available from Financial Systems Software.

You could also try contacting the CP/M Users Group at: 21 Hill Road, Darnford BA2 1RE.

Most cartridges are designed for the Commodore 64 computer and will not allow you to access the C128 while they are plugged in, they will start up the computer in C64. The only cartridge that we are aware works in C128 mode is the *Warp Speed* one. We just don't carry anything that is available from Financial Systems Software. Switching between C64 and C128 mode while a cartridge is plugged in, if the cartridge allows it, is not a problem.

Dear 128 Corner

I like the C128 pages in YC. Could you mention in them that the *MS28* version of *Supersoft's World Style*, formerly called *Word Perfect*, has now been modified to correctly underline when used with Commodore's own dot-matrix printers, DPS1101. I solved the problem for them, and they sent me a very nice gift in return. *Word Style* works in either 40 or 80 columns. It has two work areas, between which text can be transferred. An easy to use, very basic word processor, it's good value for £20. Anyone with C64 or Plus4 *Word Perfect* files can load them straight in to *Word Style 128*.

P. Simmonds, Sheltonhorpe, Bucklefield

Thanks for you letter, and the free plug for yourself. Hope that your comments will prove beneficial to some users out there.

Put pen to paper and tell us your news, views and groans

128 CORNER

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Regular readers of *Your Commodore* will know that there's more to C64 computing than blasting aliens and solving adventures. In the next few pages we'll explore exactly what your C64 can do and what hardware and software is available to help you. First we'll look at the Soft Options of the programs you can run and then at the Hard Facts, which is the extra hardware you'll need to buy to get the most out of Commodore computing.

Soft Options

Word processing utilities top most polls of computer applications and the C64 has its fair share. These range from the cheap and cheerful to the multi-featured. At the top end of the scale *World Writer 3*, available through F.S.S.L., costs £18.95 but includes an 100,000 word spell-checker, a Thesaurus to ensure you always choose the right word and an outline editor to plan your writing through a series of nested headings before you begin. The cheapest word processor is probably Logotron's *Writer 1285* that logically costs only £12.95 but includes a spell checker even though its operation is strange and slow. Before you buy a word processor think about what you're going to use it for as common uses range from letter writing to magazine articles (even books), and buy one suited to your needs.

Other word processors worth considering are *Super Script* and *PaperClip*.

If you're thinking of producing a club newsletter, or report including graphics and charts, then a DTP system will help considerably. For the C64 there are three main commands: *GeoPublish*, *PaperClip Publisher* and *Stop Press*. As with many packages each has its own strengths and weaknesses. *Stop Press*, from Database, is supplied complete with a three button mouse and is controlled by icons, but has a very limited selection of typestyles. *PaperClip Publisher* is very good but only supports the *PaperClip* word processor which reduces its value. Finally, *GeoPublish* is a little slow to use but, through a text grabber, you can incorporate text files from any word processor into your pages, and can also use any GEOS font and graphics from programs such as *Print Shop* and *Newsroom*.

Tony Hetherington gets serious as he looks into the business side of the C64

SERIOUS

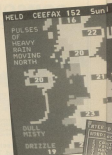
GEOS - a disk operating system devised by California based Berkeley Softwareworks - has developed into a comprehensive system. *GeoPublish* is only part of a range that includes the *GeoWrite* word processor, *GeoFile* database, *GeoCalc* spreadsheet and *GeoChart* graphing utility. The whole system uses windows, icons, pull down menus and a joystick or mouse controlled cursor.

If you want to store and retrieve data then *Superbase* is still one of the best C64 databases. The *Precision Software* package can store and sum your data, perform calculations based on it and store the answers. One function of a database is to provide a list of names and addresses that can be used with a mailmerge utility, supplied with most word processors, in order to send out a letter to everyone on your mailing list.

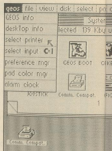
They say a picture is worth 1000 words and if you want to create masterpieces using your C64 screen as a canvas then a wide range of packages is to help you. Perhaps the best is the *GP Art Studio* which was published by Rainbow. However, now Microprose has bought Rainbow, GP bought its package back and then sold it to Data Electronics. Luckily the program isn't as confusing and it now represents excellent value for money. The new Data Art Studio offer bundles the package with a 1501 mouse, mouse mat and mouse holder for only £29.99.

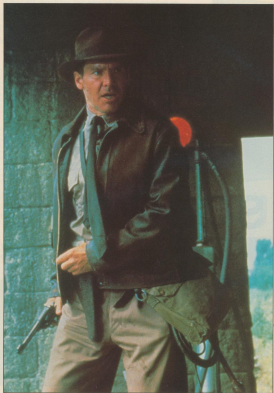
With the addition of a modem, your C64 can become a gateway into the worlds of bulletin boards and online services, such as CompuLink, that offers its users pages and pages of sample art, programs, and information at the press of a few keys and a BT phone socket.

Finally, you can add a satellite adapter to your C64 to view, store and read pages of information from Comfax and Oracle services. These not only contain daily TV listings, weather and travel details, jokes and recipes but



Above: And there's a heavy depression in Humber. Right: Make sure you've got the right word with *Word Writer*.

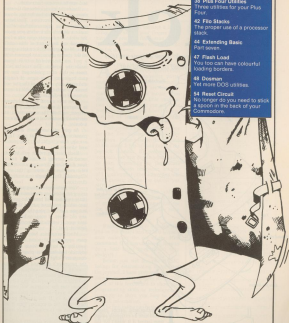




YOUR PROGRAMMER

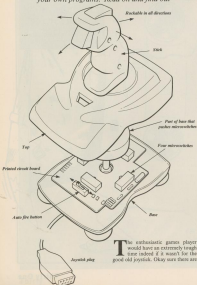
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Give it some stick

Just how does a joystick work? How do you use it in your own programs? Read on and find out



The enthusiastic games player would have an extremely tough time indeed if it weren't for the good old joystick. Okay sure there are

games that do not require control from such a device, but, for the shoot-em-up game there is just no substitute. But how do they work?

We all know what a joystick looks like: basically it will have a stick with a fire button or buttons, a base, a lead and maybe an auto-fire switch.

Inside the joystick beneath the stick there are four switches for up, down, left and right directions. The better joysticks use microswitches which make a definite click when you move the stick. The cheaper ones use a four pointed star made out of thin tensile steel. Moving the stick causes a point of the star to come into contact with a pad on the printed circuit board inside the joystick. The trouble with these is that after prolonged use the star begins to show signs of fatigue and eventually a point of the star will break off making it impossible to move in one of the directions.

If we take a look at the schematic in diagram 1 of our typical joystick, we can see how the components are electrically connected to make up such a device.

As you can see there are seven connections to the joystick plug. These are up, down, right, left, fire, ground and +5 volts dc.

Each position switch will be activated by moving the stick in one of four directions. You can also trigger two switches by moving the stick diagonally, for example in a northeast direction.

Now the computer program will be trying to determine the status of these latter switches and hence the position into which you have pushed the stick, but you can't just plug the joystick in any old where. It needs to be plugged into special interfacing circuitry via a joystick port.

Most computers have a joystick port appearing at some convenient position on its case. Some require a joystick interface that plugs into the computer's edge connector which has the processor's data and address bus running to it. This interface will do the decoding necessary to convert the movement of the joystick into the data signals that the program will need in order to work out which position the joystick is in. If the joystick port is built in to the computer, then it will have such an interface already inside it.

The interface or circuitry inside the computer will look something like

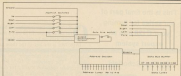
diagram 2. We have the address decoding chip and a data bus buffer. The address decoder is needed to read the status of the switches in the joystick at specific times, that is, when a specific unique address exists on the address bus and at no other time. If we did not do this then we would have all sorts of nonsense data on the data bus, which would cause the computer to lock up.

When this unique address comes along it will force the decoder to issue an enable signal to the data buffer. This buffer will then put the status of the joystick switches onto the data bus of the computer circuitry ready for the program to read and act upon.

Let us imagine that you have moved the stick to the up position. This will cause the signal on the up line to go low (to ground). When the data buffer is enabled this will cause the output on D0 to go low, or in other words to be set to zero. The data bus would then have a binary value of 1111100 (decimal 154). The program would look at this value and know that the up position has been selected. Similarly if we push the stick to the right then we would have a binary value of 1111011. If we select a northeast position, this means that switches up and right will be active which will put a binary value of 1111010 on the data bus. Likewise pressing the fire button will cause D4 to go low thus changing 11110111. Get the idea?

The program will then, at very frequent intervals possibly during an interrupt routine, be working out the status of all the joystick switches and taking the appropriate action upon its data bus findings.

As mentioned earlier, some joysticks have an auto fire switch. This brings in to play a simple multivibrator circuit which causes a continuous series of pulses at about 60 per second (each pulse mimicking the fire button). This is basically a luxury for those people



This is the final part of
our series for turning
your C128 into an
expert system

By Paul Schofield

Over the last two months, we have been providing you with the means for turning your C128 into a mini expert system. The first two sections dealt with the knowledge base and language generator.

INQUIRE is the last of the three programs making up our expert system shell. Once your expert system has been fully coded, **INQUIRE** is the only program needed to interrogate the knowledge base and evaluate the user responses. The operation is fairly self explanatory, but some knowledge of the programs operation is useful for designing and testing your applications.

On starting the program you are first required to identify the knowledge base to be used. Once this has been done the target texts, condition texts, relation rules and implication rules are loaded into a set of arrays. The master array is the relation rules array, which defines the operations to be performed and includes the necessary references for extracting information from the other data structures.

Before questioning the user, the program first displays any help texts defined in the knowledge base giving background information on the topics of the knowledge base etc. If this is longer than a single page, it is displayed a page at a time and the user indicates when their next page is to be displayed.

After this a standard help text on answering questions is displayed. For each condition, it is permissible to answer (True, False) or (don't know).

The program then examines the relation rules array starting at the entry for target 1. It scans each condition for the target and unless the condition is irrelevant for this rule, the user is asked to answer the condition question. The answer is saved and evaluated to determine whether it is the required result for the target. If it is, the program continues with this target, otherwise it marks the reason for abandoning the target and continues with the next target. There are two reasons why a target may be abandoned, either it is rejected, because a part of a condition has the wrong value or it is simply abandoned because of a don't know response. It is important to note that a don't know does not rule out a target, it is simply ignored during the first pass, as there is, maybe a solution that does not depend on the result of the particular condition.

After each condition is checked a further check is performed to avoid any other conditions are implied by this result and the appropriate results for these conditions set. This means that as the inference engine proceeds through the scan of targets and conditions, it finds it already has the answers to an increasingly large number of conditions and so does not have to ask the user.

Hopefully, if Don't Know answers have not been given, a relative rule for a target will be satisfied. At this stage a subroutine is called, which displays the possible solution and gives the user the option to exit from the program or continue searching for further solutions. A further option - (Why), is also provided.

Why?

The why option allows you to request a justification for the solution. What it does is back track through the targets and significant conditions processed to date and explain the actions it took. This is extremely useful for debugging a knowledge base and is also useful to the end user who wishes to examine the reasoning used to reach the solution. Where the expert system is used for categorizing and a new category has to be introduced this can give a useful clue to the new condition required and which targets are affected.

No (More) Solutions

Alternatively, a More response after a solution or a number of Don't Know responses can cause the inference engine to exhaust the list of targets. At this stage the user is informed that no or no more solutions could be found. The option to try again is given if any don't know answers were given. This causes a complete re-assessment of the data to be performed. This time the don't know response only affects the current rule, so that if the same unknown condition exists in several rules and no clear answer is given it will be asked repeatedly. This means that the retry is very tedious and there is no point

in requesting this unless at least some don't know conditions are going to be answered.

Applications

Having already typed in three programs, it may seem a little late to be asking what can be our expert system shell. For the home user, however, expert system applications are far from obvious, so it is quite useful to consider a few areas of potential use and also some considerations for constructing a useful knowledge base.

One very obvious application for the home computer user is a program design aid. Indeed I originally developed the *factmaker* of the reason program to assist in developing my *Lightage Master* program. Good billiage players, who have used the program well so doubt have noticed a slight flaw in the pegging strategy with certain types of hand. This is a result of posing the question "what card maximizes the scoring possibilities?". A more correct approach would have been to ask "which is the least disadvantageous card to play?" In most cases the answer is the same and once the algorithms were coded and problems noticed, it would have required a major rewrite to correct a minor short coming.

Processing the strategy in RAL format is very much simpler and quickly highlights overights.

General categorization applications are also easily handled, as are guides to procedures, such as an extended version of the chemical analysis example or the inevitable car maintenance. Some care is required in the latter of these uses as the order of both the targets and conditions can be quite critical to the usefulness of the system produced. The reason program can be quite helpful in sorting out internal these problems. In some specialized applications, it could prove to be a problem that both targets and road items have to be expressed in terms of test strings. A typical example is a solution, that is built up as a result of several rules being true. This tends to be a problem of many general purpose expert system shells, as what is really required is for a satisfied rule to trigger an action, which contributes to the general solution. This is, however, a disadvantage, if a single unique solution is sought. Such applications can, however, be handled by planning for multiple solutions and seeing each target solution found and always continuing to look for further solutions.

One final application area that should be mentioned is education. The question and answer technique is quite a good way of illustrating to children how to approach various types of problems.

Figure 4 illustrates a simple knowledge base for identifying mathematical shapes. This also demonstrates how to use implies to reduce the numbers of questions asked and also shows how multiple solutions can be useful. In this case looking for additional solutions will demonstrate, that a square is also a rhombus, a rectangle and a parallelogram.

Is our expert system shell intelligent?

It is still a subject of great debate as to what constitutes Artificial Intelligence. Some would argue that all programs are intelligent, whilst others would claim that to qualify, a program must mimic human intelligence. It is primarily the function of an expert system shell to provide a sensible strategy for evaluating the rules of the users system. It's the presentation of the rules by the user, that will determine how intelligently the particular system will respond. With *INQUEST* I have deliberately left as much control as possible to be convenient for the applications in which I use it. This means that the order in which both targets and conditions are defined is critical to the performance of the finished system. In most applications, however, it is only the order in which the targets are examined, that is of any concern to the user and it would be preferable if the conditions were examined in the most efficient order. In other words the inference engine includes the intelligence to decide the best order to evaluate the conditions. One such strategy can easily be incorporated within *INQUEST*.

After displaying the help texts, call a subroutine, which scans the relations

C128 PROGRAMMING

array $p[i]$ by condition number and computes counts of the number of targets affected by each condition. These counts are then sorted to produce an array pi , such that $pi[1]$ is the number of the most used condition and $pi[n]$ is the least used condition. The following changes are then needed in the main program:

```

1340 p=i; y=0
1350 do while p == 0 and y=0
1365 empty()
1370 next i

```

The only slight complication with doing this is that in computing the counts, implied conditions should also be taken into account. Otherwise it is possible that the revised evaluation strategy may prove less efficient than the original one, and that's not intelligent.

END P	4 THE SHAPE AND A BLOOD	00 - 1 1 1 1 1 1
4 POLYMER KNOWLEDGE BLOOD	5 THE SHAPE AND B BLOOD	00 - 1
4 BLOOD FIGHT BLOOD POLYMER BLOOD	6 THE SHAPE AND COLOR BLOOD	01 - 1 1 1 1
4 BLOOD FIGHT OF THE CHARACTERISTICS	7 THE SHAPE AND A BLOOD	01 - 1
END HELP	8 THE SHAPE AND A BLOOD	01 - 1 1 1 1 1 1
	9 THE SHAPE AND B BLOOD	01 - 1
END END	10 THE SHAPE AND ALL THE SAME LENGTH	01 - 1 1 1 1
1 10 THE SHAPE AND ALL THE SAME LENGTH	11 TWO BLOOD ARE THE SAME LENGTH	01 - 1
2 10 THE SHAPE AND ALL THE SAME LENGTH	12 ALL POLYMER ARE BLOOD POLYMER	01 - 1 1 1 1 1 1
3 10 THE SHAPE	END END	01 - 1
4 10 THE SHAPE	13 THE OPPOSITE BLOOD ARE ALL POLYMER	01 - 1 1 1 1
5 10 THE SHAPE	14 TWO BLOOD ARE PARALLEL	01 - 1
6 10 THE SHAPE	END END END	01 - 1 1 1 1 1 1
7 10 THE SHAPE	1	01 - 1
8 10 THE SHAPE	POLYMER	01 - 1 1 1 1
9 10 THE SHAPE	1 1 1 1 1 1	01 - 1
10 10 THE SHAPE	1 - 1	
11 10 THE SHAPE	2 - 1 1 1 1	
12 10 THE SHAPE	3 - 1	
13 10 THE SHAPE	3 - 1 1	
14 10 THE SHAPE	3 - 1	
15 10 THE SHAPE	3 - 1	
16 10 THE SHAPE	3 - 1 1 1 1	
17 10 THE SHAPE	END POLYMER	
	1	
18 10 THE SHAPE - 1 DON'T SHOW THE SHAPE OF	4 - 1 1 1 1 1 1	END END
POLYMER WITH BLOOD (BLOOD B BLOOD)	4 - 1	01 - 1 1 1 1 1 1
	5 - 1 1 1 1 1 1	- 1 1 - 1
	5 - 1	- 1 1 - 1 - 1
	6 - 1 1 1 1	- 1 1 - 1
	6 - 1	- 1 1 - 1 1 1 1
19 10 THE SHAPE - THE SHAPE IS NOT A POLYMER	7 - 1	- 1 1 - 1 1 1 1
END TARGET	7 - 1 1 1 1 1 1	- 1 1 - 1 1 1 1
1	7 - 1	01 - 1 1 1
CONNECTIONS	8 - 1 1 1 1	- 1 1 - 1 1 1
1 THE SHAPE AND ONLY STRAIGHT BLOOD	8 - 1	- 1 1 - 1 1 1 1 1 1
2 THE SHAPE AND COLOR BLOOD B BLOOD	9 - 1 1	- 1 1 - 1 1 1
3 THE SHAPE AND A BLOOD	END END	END END

[illegible]

We present three basic but very useful utilities for the Plus/4 and C16

Mr. D. Gluck

One thing that every Plus/4 owner knows, is that we are constantly being ignored by software companies and magazines. Between them, these pillars of the computer industry, are trying to squeeze us out, just as they did with poor old VIC20 users. But, thanks to magazines like *Power Computers*, we shall overcome. I have decided to present you with 3 simple, but nevertheless, useful routines for our humble machine. The routines are *Speedup*, *1234* *head clean* and *1234* *drive*.

100

This handy little routine is particularly useful to those without Script/Plus. The routine will read sequential ASCII files made by Script/Plus, Super Script, SuperBase and should read files from most word processors (including J-J, but with strange results.) As it is written in M/C, it can handle the speed of a 1984 disk drive and will display "names" very quickly.

How to Watch

We start at address \$1000 so that the program can be run from Basic, after setting up the screen display by changing colours and using the `LINE` routine at \$1123 to draw two lines across the top of the screen and by using the `MOVE`/`WRITE` sub routine at \$1068 to write `TEST`. If the program name fails for the file name to be input, as the name is assumed, it is stored in the tape buffer (\$B000) until a carriage return is entered. "S.R." is then added to the file name. The program will try to open the file and checks the `STATUS` word. If no file is found then the program will jump to the no file routine at \$1088 and carry through to the end routine at \$000E.

If the file is found, then the `NEXT` routine (`$I090`) is used to output the file contents to the screen, as it does so it will check to see if screen line 20 is empty, if not then a jump to the `PAUSE` routine in `$I0C0` is made. This will finish the current word by looking for a space and pause the program until an option is selected. Pacing is done by using `UNTIL` and `LIST` is output to the screen. Once a key is pressed the program will either jump to the end routine at `$I00F` or clear the screen, send `TALK` to the device and return to the `NEXT` routine at `$I090`, so continuing to read the file until the screen fills again or the file ends.

If read is selected the program can be re-run to read another file.

1000

Run the program from Basic. The program will then ask for the file you wish to read, type this in (you can use wild-cards and pattern matching.) You need not add the usual sequential codes at the end of the file name as the program will do this for you. Press return and the program will look for your file, if it does not exist then the program will inform you of this and finish, check the spelling of your file using the directory and then re-run the program. When the file is found then the contents will be displayed on the screen until the screen is nearly full, the program will then pause to allow you to finish reading the screen. Press "y" to continue or "q" to quit this file, if "y" is pressed then the screen is cleared and the program will carry on until the screen is full again or the file finishes.

It is in the morning in the road, and the sun



PLUS/4 PROGRAM

Getting It In

Basic needs to be moved to \$2000 before loading the Basic loader.
Type the following exactly as shown, check before pressing return.

POKE 44,3:POKE44,1:POKE109,1:NEW (RETURN)

This will raise BASIC, giving space for the M/C. Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the **MONITOR** and type the following:-

\$*SQREAD*,B,100,1,178

Where D=0 for disk or 1 for tape.

The new program *SQREAD* will be used.

Reset the computer or if you have more than one of my routines then type **F 1000 10FF 00 (RETURN)** to clear the work space then type **X** to return to Basic, type **NEW (RETURN)** and you are ready to load the next BASIC loader.

1551 Head Cleaner

This is an essential program for the 1551 user.

When the drive head is too dirty to read a disk, cleaning usually requires keeping a cleaning disk spinning for about thirty seconds. This program (held on tape for obvious reasons!) will spin your disk for you.

How It Works

The program is in M/C to keep loading time to a minimum. We start at address 51001 so that the program can be run from Basic, after setting up the screen display by changing colours and using the *LOCATE* routine (51000) to draw two lines across the top of the screen and by using the *MULTI-WRITE* sub routine at 51049 to write *LAST*. The routine at 51045-5104C will set the top of a screen window just under the two lines, the program now waits for the user to insert a cleaning disk and confirm that fact using the keypress routine at 51050.

When ready the program will set up a count of seven, and send an *INITIALIZE* command to the disk drive, resetting the drive and therefore spinning the disk, after resetting has occurred the program will decrement the on-screen counter, checking that "0" has not been reached, and send another *N* etc. until "0" is reached. This takes about thirty seconds. A sub-routine will check to see if the letter *N* has been pressed, if so the program will branch to *NO* (5109F) which will close the channels and return to Basic. If the count reaches 0 without interruption then the channels will be closed and the program stopped.

Instructions

Run the program from Basic. The program will pause for you to insert a cleaning disk. Press "y" then you are ready and the count-down will begin. If for any reason you need to stop the cleaning then press "n" and the program will stop, close the channels to the disk drive and return to Basic.

Type **RUN** to restart.

Getting It In

Basic needs to be moved to \$2000 before loading the basic loader.

Type the following exactly as shown, check before pressing return.

POKE 44,3:POKE44,1:POKE109,1:NEW (RETURN)

This will raise Basic, giving space for the M/C. Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the **MONITOR** and type the following:

```

51000 DATA 000,000,000,000,000,000,000,000
51001 DATA 0,00,000,000,000,000,000,000
51002 DATA 0,00,000,000,000,000,000,000
51003 DATA 000,00,000,000,000,000,000,000
51004 DATA 000,0,000,000,000,000,000,000
51005 DATA 000,000,000,000,000,000,000,000
51006 DATA 000,000,000,000,000,000,000,000
51007 DATA 000,000,000,000,000,000,000,000
51008 DATA 000,000,000,000,000,000,000,000
51009 DATA 000,000,000,000,000,000,000,000
51010 DATA 000,000,000,000,000,000,000,000
51011 DATA 000,000,000,000,000,000,000,000
51012 DATA 000,000,000,000,000,000,000,000
51013 DATA 000,000,000,000,000,000,000,000
51014 DATA 000,000,000,000,000,000,000,000
51015 DATA 000,000,000,000,000,000,000,000
51016 DATA 000,000,000,000,000,000,000,000
51017 DATA 000,000,000,000,000,000,000,000
51018 DATA 000,000,000,000,000,000,000,000
51019 DATA 000,000,000,000,000,000,000,000
51020 DATA 000,000,000,000,000,000,000,000
51021 DATA 000,000,000,000,000,000,000,000
51022 DATA 000,000,000,000,000,000,000,000
51023 DATA 000,000,000,000,000,000,000,000
51024 DATA 000,000,000,000,000,000,000,000
51025 DATA 000,000,000,000,000,000,000,000
51026 DATA 000,000,000,000,000,000,000,000
51027 DATA 000,000,000,000,000,000,000,000
51028 DATA 000,000,000,000,000,000,000,000
51029 DATA 000,000,000,000,000,000,000,000
51030 DATA 000,000,000,000,000,000,000,000
51031 DATA 000,000,000,000,000,000,000,000
51032 DATA 000,000,000,000,000,000,000,000
51033 DATA 000,000,000,000,000,000,000,000
51034 DATA 000,000,000,000,000,000,000,000
51035 DATA 000,000,000,000,000,000,000,000
51036 DATA 000,000,000,000,000,000,000,000
51037 DATA 000,000,000,000,000,000,000,000
51038 DATA 000,000,000,000,000,000,000,000
51039 DATA 000,000,000,000,000,000,000,000
51040 DATA 000,000,000,000,000,000,000,000
51041 DATA 000,000,000,000,000,000,000,000
51042 DATA 000,000,000,000,000,000,000,000
51043 DATA 000,000,000,000,000,000,000,000
51044 DATA 000,000,000,000,000,000,000,000
51045 DATA 000,000,000,000,000,000,000,000
51046 DATA 000,000,000,000,000,000,000,000
51047 DATA 000,000,000,000,000,000,000,000
51048 DATA 000,000,000,000,000,000,000,000
51049 DATA 000,000,000,000,000,000,000,000
51050 DATA 000,000,000,000,000,000,000,000
51051 DATA 000,000,000,000,000,000,000,000
51052 DATA 000,000,000,000,000,000,000,000
51053 DATA 000,000,000,000,000,000,000,000
51054 DATA 000,000,000,000,000,000,000,000
51055 DATA 000,000,000,000,000,000,000,000
51056 DATA 000,000,000,000,000,000,000,000
51057 DATA 000,000,000,000,000,000,000,000
51058 DATA 000,000,000,000,000,000,000,000
51059 DATA 000,000,000,000,000,000,000,000
51060 DATA 000,000,000,000,000,000,000,000
51061 DATA 000,000,000,000,000,000,000,000
51062 DATA 000,000,000,000,000,000,000,000
51063 DATA 000,000,000,000,000,000,000,000
51064 DATA 000,000,000,000,000,000,000,000
51065 DATA 000,000,000,000,000,000,000,000
51066 DATA 000,000,000,000,000,000,000,000
51067 DATA 000,000,000,000,000,000,000,000
51068 DATA 000,000,000,000,000,000,000,000
51069 DATA 000,000,000,000,000,000,000,000
51070 DATA 000,000,000,000,000,000,000,000
51071 DATA 000,000,000,000,000,000,000,000
51072 DATA 000,000,000,000,000,000,000,000
51073 DATA 000,000,000,000,000,000,000,000
51074 DATA 000,000,000,000,000,000,000,000
51075 DATA 000,000,000,000,000,000,000,000
51076 DATA 000,000,000,000,000,000,000,000
51077 DATA 000,000,000,000,000,000,000,000
51078 DATA 000,000,000,000,000,000,000,000
51079 DATA 000,000,000,000,000,000,000,000
51080 DATA 000,000,000,000,000,000,000,000
51081 DATA 000,000,000,000,000,000,000,000
51082 DATA 000,000,000,000,000,000,000,000
51083 DATA 000,000,000,000,000,000,000,000
51084 DATA 000,000,000,000,000,000,000,000
51085 DATA 000,000,000,000,000,000,000,000
51086 DATA 000,000,000,000,000,000,000,000
51087 DATA 000,000,000,000,000,000,000,000
51088 DATA 000,000,000,000,000,000,000,000
51089 DATA 000,000,000,000,000,000,000,000
51090 DATA 000,000,000,000,000,000,000,000
51091 DATA 000,000,000,000,000,000,000,000
51092 DATA 000,000,000,000,000,000,000,000
51093 DATA 000,000,000,000,000,000,000,000
51094 DATA 000,000,000,000,000,000,000,000
51095 DATA 000,000,000,000,000,000,000,000
51096 DATA 000,000,000,000,000,000,000,000
51097 DATA 000,000,000,000,000,000,000,000
51098 DATA 000,000,000,000,000,000,000,000
51099 DATA 000,000,000,000,000,000,000,000
51100 DATA 000,000,000,000,000,000,000,000
51101 DATA 000,000,000,000,000,000,000,000
51102 DATA 000,000,000,000,000,000,000,000
51103 DATA 000,000,000,000,000,000,000,000
51104 DATA 000,000,000,000,000,000,000,000
51105 DATA 000,000,000,000,000,000,000,000
51106 DATA 000,000,000,000,000,000,000,000
51107 DATA 000,000,000,000,000,000,000,000
51108 DATA 000,000,000,000,000,000,000,000
51109 DATA 000,000,000,000,000,000,000,000
51110 DATA 000,000,000,000,000,000,000,000
51111 DATA 000,000,000,000,000,000,000,000
51112 DATA 000,000,000,000,000,000,000,000
51113 DATA 000,000,000,000,000,000,000,000
51114 DATA 000,000,000,000,000,000,000,000
51115 DATA 000,000,000,000,000,000,000,000
51116 DATA 000,000,000,000,000,000,000,000
51117 DATA 000,000,000,000,000,000,000,000
51118 DATA 000,000,000,000,000,000,000,000
51119 DATA 000,000,000,000,000,000,000,000
51120 DATA 000,000,000,000,000,000,000,000
51121 DATA 000,000,000,000,000,000,000,000
51122 DATA 000,000,000,000,000,000,000,000
51123 DATA 000,000,000,000,000,000,000,000
51124 DATA 000,000,000,000,000,000,000,000
51125 DATA 000,000,000,000,000,000,000,000
51126 DATA 000,000,000,000,000,000,000,000
51127 DATA 000,000,000,000,000,000,000,000
51128 DATA 000,000,000,000,000,000,000,000
51129 DATA 000,000,000,000,000,000,000,000
51130 DATA 000,000,000,000,000,000,000,000
51131 DATA 000,000,000,000,000,000,000,000
51132 DATA 000,000,000,000,000,000,000,000
51133 DATA 000,000,000,000,000,000,000,000
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51140 DATA 000,000,000,000,000,000,000,000
51141 DATA 000,000,000,000,000,000,000,000
51142 DATA 000,000,000,000,000,000,000,000
51143 DATA 000,000,000,000,000,000,000,000
51144 DATA 000,000,000,000,000,000,000,000
51145 DATA 000,000,000,000,000,000,000,000
51146 DATA 000,000,000,000,000,000,000,000
51147 DATA 000,000,000,000,000,000,000,000
51148 DATA 000,000,000,000,000,000,000,000
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51155 DATA 000,000,000,000,000,000,000,000
51156 DATA 000,000,000,000,000,000,000,000
51157 DATA 000,000,000,000,000,000,000,000
51158 DATA 000,000,000,000,000,000,000,000
51159 DATA 000,000,000,000,000,000,000,000
51160 DATA 000,000,000,000,000,000,000,000
51161 DATA 000,000,000,000,000,000,000,000
51162 DATA 000,000,000,000,000,000,000,000
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51164 DATA 000,000,000,000,000,000,000,000
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51167 DATA 000,000,000,000,000,000,000,000
51168 DATA 000,000,000,000,000,000,000,000
51169 DATA 000,000,000,000,000,000,000,000
51170 DATA 000,000,000,000,000,000,000,000
51171 DATA 000,000,000,000,000,000,000,000
51172 DATA 000,000,000,000,000,000,000,000
51173 DATA 000,000,000,000,000,000,000,000
51174 DATA 000,000,000,000,000,000,000,000
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51181 DATA 000,000,000,000,000,000,000,000
51182 DATA 000,000,000,000,000,000,000,000
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51189 DATA 000,000,000,000,000,000,000,000
51190 DATA 000,000,000,000,000,000,000,000
51191 DATA 000,000,000,000,000,000,000,000
51192 DATA 000,000,000,000,000,000,000,000
51193 DATA 000,000,000,000,000,000,000,000
51194 DATA 000,000,000,000,000,000,000,000
51195 DATA 000,000,000,000,000,000,000,000
51196 DATA 000,000,000,000,000,000,000,000
51197 DATA 000,000,000,000,000,000,000,000
51198 DATA 000,000,000,000,000,000,000,000
51199 DATA 000,000,000,000,000,000,000,000
51200 DATA 000,000,000,000,000,000,000,000
51201 DATA 000,000,000,000,000,000,000,000
51202 DATA 000,000,000,000,000,000,000,000
51203 DATA 000,000,000,000,000,000,000,000
51204 DATA 000,000,000,000,000,000,000,000
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51208 DATA 000,000,000,000,000,000,000,000
51209 DATA 000,000,000,000,000,000,000,000
51210 DATA 000,000,000,000,000,000,000,000
51211 DATA 000,000,000,000,000,000,000,000
51212 DATA 000,000,000,000,000,000,000,000
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51221 DATA 000,000,000,000,000,000,000,000
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51230 DATA 000,000,000,000,000,000,000,000
51231 DATA 000,000,000,000,000,000,000,000
51232 DATA 000,000,000,000,000,000,000,000
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51266 DATA 000,000,000,000,000,000,000,000
51267 DATA 000,000,000,000,000,000,000,000
51268 DATA 000,000,000,000,000,000,000,000
51269 DATA 000,000,000,000,000,000,000,000
51270 DATA 000,000,000,000,000,000,000,000
51271 DATA 000,000,000,000,000,000,000,000
51272 DATA 000,000,000,000,0
```


51551 HEAD CLEAN*,D,000,HC9

Where D=0 for disk or 1 for tape.

The new program *551 HEAD-CLEAN* will be saved.

Reset the computer or if you have more than one of my routines then type **F 1000 1FFF 00 (RETURN)** to clear the work space then type **X** to return to Basic, type **NEW (RETURN)** and you are ready to load the next Basic loader.

1551 Device

Do you have more than one Disk Drive?

Many people do not like opening up their drives and cutting jumpers etc. in order to access the second drive.

A short, quick MC program will do this for you. It was especially written for the 1551.

How It Works

The start is at address \$1001 so that the program can be run from Basic, after setting up the screen display by changing columns and using the "LINE8" routine (\$1006) to draw two lines across the top of the screen and by using the *MULTI-WRITE* sub routine (\$10C8) to write *LIST4*, the program now uses the keypress routine (\$1096) to ask for the device number required and will compare the input to "8" and "9". If neither then a loop is made. The routine will jump to one of two routines, *ENGR7* (\$1086) *NRN8* (\$1076) to select the number before passing to *OPTE8* (\$108B) to send the command to the drive, closing the command channel before printing *LISTC* (\$1133) to the screen, telling you that the number has been changed.

Instructions

Run the program from Basic. The program will pause and tell you to switch all of the drives that you do NOT require changing.

Switch off and confirm this by pressing either "8" or "9" as required.

The drive will now be changed and the program will returned to Basic.

Getting It In

Basic needs to be moved to \$2000 before loading the Basic loader.

Type the following exactly as shown, check before pressing return.

POKE 44,2:POKE 40,1:POKE 1082,8:NEW (RETURN)

This will raise Basic, giving space for the M/C. Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the *MONITOR* and type the following:

51551 DEVICE NUM*,D,000,HC9

Where D=0 for disk or 1 for tape.

The new program *551 DEVICE NUM* will be saved.

Reset the computer or if you have more than one of my routines then type **F 1000 1FFF 00 (RETURN)** to clear the work space then type **X** to return to Basic, type **NEW (RETURN)** and you are ready to carry on working.

Filo-Stacks

Get to grips with the First In Last Out format of the Stack

By Steven Burgess

A stack can be described more simply by using an analogy. If you have a tower of building blocks, a stack of building blocks, you can only take blocks off the top and you can only put blocks on the top, if you try to take a block from the bottom of the pile (stack) then it will fall down, it is impossible to put a block on the bottom of this pile without first lifting it. The same rules apply to stacks in computers, data can only be put on the top of a stack and taken from the top. The acronym FILO, describes this, it stands for First In Last Out. The first item to be put on is the last to be taken off, and the last item to be put on is the first to be taken off.

Stacks are used extensively in machine language programs and are also used by BASIC, whenever GOSUB is encountered, the return address is stored on a stack, so that the computer can return to the correct place when the RETURN statement appears. Stacks are also used during FOR...NEXT loops. Machine language programmers use stacks to store the values of registers which may be corrupted by a routine, which they wish to use.

Pushing!

The process of adding items to a stack is called pushing, you push a piece of data onto the stack. The actual programming of this is very simple. In order to push data onto a stack you must have a number of things:

1. A stack. (you use an array in BASIC)
2. A stack pointer.

SP
P→

CONTENTS	LOCATION
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12

	100
	101
	102
	103

STACK POINTER = 0

DIAGRAM 1.0

SP
P→

CONTENTS	LOCATION
1021	1
	2
	3
	4
	5
	6
	7
	8

	100
	101
	102
	103
	104

STACK POINTER = 1

DIAGRAM 1.1

1. Data to push.

When you enter the data which you want to push the stack pointer is increased by one, the data is then PUSHED onto the location indicated by the stack pointer and you have finished. The same process is executed every time you push to a stack.

Let's pretend we have set up an array, in BASIC, as a stack, there is, currently no data stored therein. The stack pointer is pointing at location 0 (see diagram 1.0), let's enter a value, 1021, we increase the stack pointer by 1 and store 1021 in location 1 (see diagram 1.1). Entering another value, 4938, causes the same process to occur, except the stack pointer now becomes 2 (see diagram 1.2).

Popping!

To remove an item from a stack you pop it. Popping an item from the stack causes the item which the stack pointer is pointing at,

SP
P→

CONTENTS	LOCATION
1021	1
4938	2
	3
	4
	5
	6
	7
	8

	100
	101
	102
	103
	104

STACK POINTER = 2

DIAGRAM 1.2

[illegible]

the last item to be pushed), to be taken off the stack (popped) the stack pointer is then decreased, pointing at the item which was pushed before the previous one.

We shall now pop an item from the stack described above (see fig. 1.3), to pop we simply read the item which is stored in the location indicated by the stack pointer. The stack pointer contains 2 so the item we pop is stored in location 2. The item is 4838, we then decrease the stack pointer by 1 so it becomes 1. Popping again gives us 0021 and empties the stack. The stack is empty when the stack pointer is 0. The stack is full when the stack pointer is equal to the number of elements defined in the array.

The program "STACK DEMO" demonstrates popping & pushing to the full. Type in the program using the syntax checker. Save it to (DISK/TAPE) and type RUN (RETURN).

On execution you will be presented with a graphical representation of a stack, on the left hand side of the screen, the stack has room for 20 elements, on the right hand side of the screen is a menu. The options are as follows:

1. 100
1. 105
1. 110

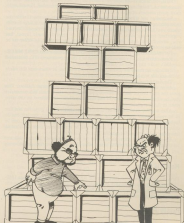
On selecting option 1 you will be told what the value of the POPped item is, if the stack is empty you will be informed.

Support for 1 year will be subject to

enter a value, numeric or string, the value will then be added to the stack and you will be returned to the menu. End is self-explanatory.

Will I have you over for some more

for stacks and, although, the program given is not really useful it should demonstrate how stacks operate, and the routines can be adapted for use in your own programs should you find the need.



When developing a large Basic program you'll find that sooner or later the line numbers become quite messy. In one part of your program you have codes of space between line numbers, while in other parts it's impossible to insert a single new line.

The only answer is to renumber the textfile.

This is what the tool kit routine does which we want to develop this month. Again, once you understand how Basic deals with lines and line numbers, this is quite straightforward to do. And here Commodore Basic makes, for once, life easier for us, by having structured a textfile in quite a special way.

The Linkpointer

Commodore starts each Basic line with a pointer to the next line. In this way a Basic textfile is chained. To find a specific line you don't have to sift through the whole of the textfile. Instead you just jump from line pointer to line pointer, each time looking at the actual line number which follows directly afterwards. The rest of the line you can ignore.

The linkpointer contains the address of the start of the next line, expressed in the usual low byte/high fashion.

The end of the textfile has been reached when the two linkpointer locations contain zero.

Renumbering a textfile involves simply jumping from linkpointer to linkpointer, each time changing the line number that follows in the next two locations.

Renumbering Options

But in order to make our renumbering routine as useful as possible it is a good idea to include some options into the command.

First, we want to be able to determine in what step the textfile will be renumbered. "Step" means the distance between each line number. For example, most programmers number a textfile in steps of ten.

Secondly, we want to be able to determine where in the textfile the renumbering starts and where it ends. This is useful if you have a large textfile where you have commented (or noted down) with which line number certain important routines start. You may not want to upset this basic layout, but you, nevertheless, need some local renumbering to be done, in order to be able to insert some new lines.

For renumbering I have chosen the extended Basic command **RENUMBER**.

Renumbering is, of course, only done as a direct command. The command wouldn't make any sense as part of a program.

You can use the command without any parameters, in which case the whole of the textfile will be renumbered in steps of ten.

The first parameter is the step value.

After this comes a comma, and then the second parameter follows. This gives the start line of the renumbering process. You may omit this parameter too, in which case the whole of the textfile will be renumbered in the steps given in the first parameter.

After another comma follows the final parameter which gives the last line to be renumbered. (Actually, the way the routine works out, the last line to be renumbered is one line before the line given.) This last parameter can be omitted too, in which case the textfile will be renumbered from the starting line given to the end of the textfile.

The line number given as the start of the renumbering process will not be changed. The renumbering starts after that line. Also, the renumbering will stop one line before the line given as the end, as already mentioned.

How It Is Done

First we gather the parameters after the **RENUMBER** command (lines 1560-1580). If there are no further parameters (or none at all), we will find the usual zero which terminates the line. **REQ**, therefore, tells us if no-parameter or no-further parameter is there.

Extend Basic

Renumbering your
textfile is easier than
you may think

By Burghard-Henry
Lehmann

```

1500 REM *****
1510 REM *****
1520 REM *****
1530 REM *****
1540 REM *****
1550 REM *****
1560 REM *****
1570 REM *****
1580 REM *****
1590 REM *****
1600 REM *****
1610 REM *****
1620 REM *****
1630 REM *****
1640 REM *****
1650 REM *****
1660 REM *****
1670 REM *****
1680 REM *****
1690 REM *****
1700 REM *****
1710 REM *****
1720 REM *****
1730 REM *****
1740 REM *****
1750 REM *****
1760 REM *****
1770 REM *****
1780 REM *****
1790 REM *****
1800 REM *****
1810 REM *****
1820 REM *****
1830 REM *****
1840 REM *****
1850 REM *****
1860 REM *****
1870 REM *****
1880 REM *****
1890 REM *****
1900 REM *****
1910 REM *****
1920 REM *****
1930 REM *****
1940 REM *****
1950 REM *****
1960 REM *****
1970 REM *****
1980 REM *****
1990 REM *****
2000 REM *****

```

nding asic

If a parameter is given we gather it into the appropriate variable by calling on two ROM routines: `FACEA` gets the value itself and places it in the floating point accumulator. `FACEF` gets the value from the floating point accumulator and puts it into zero (page 314/13), and also into the Y-register (low byte) and the accumulator (high byte).

After each parameter the next character is tested to see if it is a comma. If it isn't, the routine exits by giving a syntax error report. This syntax error report is forced simply by jumping to the normal routine (lines 1100-1103) instead of returning from the subroutine, since the whole of the renumbering routine is a subroutine.

In the case of no start parameter, we enter 10 into the variable, called `START` (lines 1200-1203). This will result in the textfile being renumbered in steps of ten.

In the case of no end parameter, we enter zero into the variable, called `START` (lines 1420-1440).

In the case of an end parameter, we enter the highest possible line number into the variable, called `END` (lines 1450-1500). This is, of course, 65536, or \$FF in the low byte and \$FF in the high byte.

Renumbering a Textfile

First, we get the beginning of the textfile from the system variables `STR/SC` and copy it into our variables, called `LINKPOINT` (lines 1600-1710). The beginning of the textfile means also the first linkpointer in the chain of all the linkpointers.

Next, we test if the start parameter had been given (lines 1750-1760). If it hadn't we jump straight to beginning of the renumbering routine proper. Otherwise we have to find the line where renumbering starts.

As I've said, with the help of the linkpointer, this is pretty easy.

We enter a loop which jumps from one linkpointer to the next (lines 1800-1930). That is, the address contained in the linkpointer is gathered and becomes the next linkpointer, and so on.

At the beginning a test is made, if the end of the textfile has been reached (lines 1950-1960). If the end of the textfile has been reached, this means, that the start line given does not exist. In this case the routine exits with a syntax error.

Lines 1980-1990 perform the chaining action itself.

Before we enter the renumbering loop itself, we gather the line number after the linkpointer where we start into a variable, called `CURLINE` (lines 2100-2160). This variable always contains the line number to which the step value is added, performing the renumbering itself.

At the beginning of the renumbering loop itself, we test first of all if the end of the textfile has been reached (lines 2250-2260). That is, if the low byte of the linkpointer contains not zero, the loop continues as normal. If it contains zero, the high byte of the linkpointer is tested for zero. If that too contains zero, the end of the textfile has been reached. The routine exits.

Next, the next linkpointer is put instead of the former one in the variable `LINKPOINT` (lines 2310-2360).

Then we test if the line given in the end parameter has been reached (lines 2400-2520).

For this I am using a special way of comparing two 16-bit values (lines 2400-2520).

As you know, on the 6502 dealing with 16-bit numbers can be quite involved. To compare two 16-bit numbers, we subtract the two numbers from each other and place the result in a variable, called `TEMPSTORE`. This variable has no other purpose but to set the zero and carry flag.

If the first value equals the second, the zero flag will be set. If the first value is less than the second, carry will be clear. And if the first value is larger than the second, carry will be set.

In our routine, if carry is set, it means that the end parameter has been reached and the routine exits.

Finally, the renumbering itself is done by adding the step value to `CURLINE` (lines 2560-2620) and then writing the new line number into its proper place (lines 2640-2710).

```

1700 0000 0000 0000 0000 0000 0000 0000
1710 0000 0000 0000 0000 0000 0000 0000
1720 0000 0000 0000 0000 0000 0000 0000
1730 0000 0000 0000 0000 0000 0000 0000
1740 0000 0000 0000 0000 0000 0000 0000
1750 0000 0000 0000 0000 0000 0000 0000
1760 0000 0000 0000 0000 0000 0000 0000
1770 0000 0000 0000 0000 0000 0000 0000
1780 0000 0000 0000 0000 0000 0000 0000
1790 0000 0000 0000 0000 0000 0000 0000
1800 0000 0000 0000 0000 0000 0000 0000
1810 0000 0000 0000 0000 0000 0000 0000
1820 0000 0000 0000 0000 0000 0000 0000
1830 0000 0000 0000 0000 0000 0000 0000
1840 0000 0000 0000 0000 0000 0000 0000
1850 0000 0000 0000 0000 0000 0000 0000
1860 0000 0000 0000 0000 0000 0000 0000
1870 0000 0000 0000 0000 0000 0000 0000
1880 0000 0000 0000 0000 0000 0000 0000
1890 0000 0000 0000 0000 0000 0000 0000
1900 0000 0000 0000 0000 0000 0000 0000
1910 0000 0000 0000 0000 0000 0000 0000
1920 0000 0000 0000 0000 0000 0000 0000
1930 0000 0000 0000 0000 0000 0000 0000
1940 0000 0000 0000 0000 0000 0000 0000
1950 0000 0000 0000 0000 0000 0000 0000
1960 0000 0000 0000 0000 0000 0000 0000
1970 0000 0000 0000 0000 0000 0000 0000
1980 0000 0000 0000 0000 0000 0000 0000
1990 0000 0000 0000 0000 0000 0000 0000
2000 0000 0000 0000 0000 0000 0000 0000
2010 0000 0000 0000 0000 0000 0000 0000
2020 0000 0000 0000 0000 0000 0000 0000
2030 0000 0000 0000 0000 0000 0000 0000
2040 0000 0000 0000 0000 0000 0000 0000
2050 0000 0000 0000 0000 0000 0000 0000
2060 0000 0000 0000 0000 0000 0000 0000
2070 0000 0000 0000 0000 0000 0000 0000
2080 0000 0000 0000 0000 0000 0000 0000
2090 0000 0000 0000 0000 0000 0000 0000
2100 0000 0000 0000 0000 0000 0000 0000
2110 0000 0000 0000 0000 0000 0000 0000
2120 0000 0000 0000 0000 0000 0000 0000
2130 0000 0000 0000 0000 0000 0000 0000
2140 0000 0000 0000 0000 0000 0000 0000
2150 0000 0000 0000 0000 0000 0000 0000
2160 0000 0000 0000 0000 0000 0000 0000
2170 0000 0000 0000 0000 0000 0000 0000
2180 0000 0000 0000 0000 0000 0000 0000
2190 0000 0000 0000 0000 0000 0000 0000
2200 0000 0000 0000 0000 0000 0000 0000
2210 0000 0000 0000 0000 0000 0000 0000
2220 0000 0000 0000 0000 0000 0000 0000
2230 0000 0000 0000 0000 0000 0000 0000
2240 0000 0000 0000 0000 0000 0000 0000
2250 0000 0000 0000 0000 0000 0000 0000
2260 0000 0000 0000 0000 0000 0000 0000
2270 0000 0000 0000 0000 0000 0000 0000
2280 0000 0000 0000 0000 0000 0000 0000
2290 0000 0000 0000 0000 0000 0000 0000
2300 0000 0000 0000 0000 0000 0000 0000
2310 0000 0000 0000 0000 0000 0000 0000
2320 0000 0000 0000 0000 0000 0000 0000
2330 0000 0000 0000 0000 0000 0000 0000
2340 0000 0000 0000 0000 0000 0000 0000
2350 0000 0000 0000 0000 0000 0000 0000
2360 0000 0000 0000 0000 0000 0000 0000
2370 0000 0000 0000 0000 0000 0000 0000
2380 0000 0000 0000 0000 0000 0000 0000
2390 0000 0000 0000 0000 0000 0000 0000
2400 0000 0000 0000 0000 0000 0000 0000
2410 0000 0000 0000 0000 0000 0000 0000
2420 0000 0000 0000 0000 0000 0000 0000
2430 0000 0000 0000 0000 0000 0000 0000
2440 0000 0000 0000 0000 0000 0000 0000
2450 0000 0000 0000 0000 0000 0000 0000
2460 0000 0000 0000 0000 0000 0000 0000
2470 0000 0000 0000 0000 0000 0000 0000
2480 0000 0000 0000 0000 0000 0000 0000
2490 0000 0000 0000 0000 0000 0000 0000
2500 0000 0000 0000 0000 0000 0000 0000
2510 0000 0000 0000 0000 0000 0000 0000
2520 0000 0000 0000 0000 0000 0000 0000
2530 0000 0000 0000 0000 0000 0000 0000
2540 0000 0000 0000 0000 0000 0000 0000
2550 0000 0000 0000 0000 0000 0000 0000
2560 0000 0000 0000 0000 0000 0000 0000
2570 0000 0000 0000 0000 0000 0000 0000
2580 0000 0000 0000 0000 0000 0000 0000
2590 0000 0000 0000 0000 0000 0000 0000
2600 0000 0000 0000 0000 0000 0000 0000
2610 0000 0000 0000 0000 0000 0000 0000
2620 0000 0000 0000 0000 0000 0000 0000
2630 0000 0000 0000 0000 0000 0000 0000
2640 0000 0000 0000 0000 0000 0000 0000
2650 0000 0000 0000 0000 0000 0000 0000
2660 0000 0000 0000 0000 0000 0000 0000
2670 0000 0000 0000 0000 0000 0000 0000
2680 0000 0000 0000 0000 0000 0000 0000
2690 0000 0000 0000 0000 0000 0000 0000
2700 0000 0000 0000 0000 0000 0000 0000
2710 0000 0000 0000 0000 0000 0000 0000
2720 0000 0000 0000 0000 0000 0000 0000
2730 0000 0000 0000 0000 0000 0000 0000
2740 0000 0000 0000 0000 0000 0000 0000
2750 0000 0000 0000 0000 0000 0000 0000
2760 0000 0000 0000 0000 0000 0000 0000
2770 0000 0000 0000 0000 0000 0000 0000
2780 0000 0000 0000 0000 0000 0000 0000
2790 0000 0000 0000 0000 0000 0000 0000
2800 0000 0000 0000 0000 0000 0000 0000
2810 0000 0000 0000 0000 0000 0000 0000
2820 0000 0000 0000 0000 0000 0000 0000
2830 0000 0000 0000 0000 0000 0000 0000
2840 0000 0000 0000 0000 0000 0000 0000
2850 0000 0000 0000 0000 0000 0000 0000
2860 0000 0000 0000 0000 0000 0000 0000
2870 0000 0000 0000 0000 0000 0000 0000
2880 0000 0000 0000 0000 0000 0000 0000
2890 0000 0000 0000 0000 0000 0000 0000
2900 0000 0000 0000 0000 0000 0000 0000
2910 0000 0000 0000 0000 0000 0000 0000
2920 0000 0000 0000 0000 0000 0000 0000
2930 0000 0000 0000 0000 0000 0000 0000
2940 0000 0000 0000 0000 0000 0000 0000
2950 0000 0000 0000 0000 0000 0000 0000
2960 0000 0000 0000 0000 0000 0000 0000
2970 0000 0000 0000 0000 0000 0000 0000
2980 0000 0000 0000 0000 0000 0000 0000
2990 0000 0000 0000 0000 0000 0000 0000
3000 0000 0000 0000 0000 0000 0000 0000

```

C64 PROGRAMMING

[illegible]

My Close Friends

Also, when leaving programs, the flashing bands will also appear.

10 PERC-00004
11 BRACED TWO-PIECE BRACKET, 1/2" X 1/2"
12 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
13 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
14 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
15 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
16 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
17 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
18 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
19 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
20 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
21 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
22 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
23 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
24 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
25 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
26 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
27 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
28 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
29 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"
30 1/2" X 1/2" X 1/2" X 1/2" X 1/2" X 1/2"

Get the most from your disk drive with this enhanced DOS utility

By M. Holmes

The old C64, although undoubtedly still very popular, is, it must be admitted, getting a bit long in the tooth and does tend to show its age even when compared with some other contemporary makes, and more than every by modern day expectations. For instance, the way in which the operating system with which it is provided leans in favour of tape based data storage, to such a degree that when floppy disk drives became more affordable, the awkward nature in which the 64 was made to converse with them was guaranteed to frustrate in double quick time. The nice consequence of this though is that said drives have to take care of the large part of disk management themselves, which leaves the computer free of those activities.

There is this, to put it politely, crude simplicity of the Basic provided, when you consider what wonderful and useful keywords other machines have. It didn't take me too long to discover that really it's a good thing that the 64's Basic should be so, er, basic. Whilst it is still possible to do what most other Basics do, with a bit of application, any listings are easily transferable to another machine, since bog standard Microsoft based keywords are used. Have you ever tried converting for example a BASIC program for a Commodore to use? Forget it.

In order to extend the Commodore's repertoire, or speed things up a bit, one usually has to resort to machine code. This isn't necessarily all that difficult (it depends on what you want; not all that can be done in machine code is worth doing, and not all that is worth doing can be done), because there are a whole host of valuable and easily used routines in both the Basic and KERNAL ROMs available to help perform the necessary function. You may have already seen and used by *LINE INPUT* routine (in a previous issue) which uses the concept to effectively give the C64 what amounts to a new Basic keyword.

Of course there are now a number of after-market products which can give you what you need, especially in the area of disk management, some of which are cartridges or alternative ROMs, and some of which are software packages. But, if you want to keep your C64 as standard as possible, for whatever it is you want to do, you need something that leaves the memory virtually untouched, is there when you need it, and remains unobtrusive and out of the way at all other times.

This is *DOSMAN* (Disk Operating System Manager), originally written to provide the C64 with the ability to recognise that disk drives exist, but not alter it so much that I cannot use my little machine code or modified Basic routines. In essence it is similar to something once provided on a utilities disk supplied with a new 1541 disk drive (are they still?), and is primarily meant to be an aid for the Basic programmer.

Isn't the C64 a wonderful machine? Writing *DOSMAN* was so much easier than expected that I spent the extra time and effort adding some extra utilities that I was sure would prove very useful while editing Basic text and developing a program. Okay, so I've been spoiled having got used to using an IBM PC, but I didn't see why my Commodore couldn't do the same sort of thing. Consequently *DOSMAN* is now accompanied by a group of useful utilities which don't actually have anything to do with disk management, but which make editing Basic a whole lot easier and quicker. These include a customised Non-Maskable Interrupt (NMI), programmed function keys for implementing the most of ten repeated Basic commands used during editing/debugging, and an *OLD* routine. For convenience many of these have similar syntax to the old DOS 5.1 on the 1541 utilities disk, and *The Final Cartridge*.

Installing Dosman

Type in and save the program **DOSLOAD**. Once run, this will create the MUC program - **DOSMAN**. To activate **DOSMAN**, type **STX81214** after loading.

The program and its satellites sit at 50781 (3CA45) onwards, leaving the lower Free RAM area free for you or your programs to use.

Commands Available

STX 51214 - This creates/enables **DOSMAN**, the custom NMI and the function keys.

@ V - This disables **DOSMAN**, but leaves the custom NMI and the function keys intact.

[RUN,STOP][RESTORE] - This disables the custom NMI and the function keys, but leaves **DOSMAN** intact. A BRK instruction executed in machine code has the same effect.

Having got it in and enabled, you have access to the following:

The six primary DOS commands

Direct mode only, ignored in program mode:

@(on its own) - get and print disk drive error message.

@ < command > - Send **< command >** to current disk drive if it isn't one of the three secondary commands below. You do not enclose it in quotes. The command is any of the conventional DOS commands such as **@ I** to initialize, **@ V** to validate, **C NAME2-NAME1** to copy file, etc.

The three secondary DOS commands

@ < number > - Change the current device to **< number >** for all further operations. e.g., **@ 9** results in all further DOS activities to be carried out with device 9. **@ 8** changes the current device back to 8.

@ S < optional mask > - Get and display disk directory from the current device. Basic memory remains untouched. Wildcards and filetype identifiers can be used in **< optional mask >** to select files to view textually or according to filetype. e.g., **@ SDOS*** lists only files beginning with the first three characters DOS, **@ STTT** lists only filenames of five characters in length. **@ S*P** only lists files of type PRG.

@ X - Disables **DOSMAN**. DOS commands will no longer be recognised, but will produce **SOFTWARE ERROR**.

/ - LOAD

/ < filename > - Load **< filename >** from current device into Basic memory, replace program already existing if any. If there was a problem during the load there will be **LOAD ERROR** displayed. You must then use **@** to interrogate the drive to find out what went wrong, which will return e.g. **FILE NOT FOUND** or **DRIVE NOT READY**. If the load was successful there will be no message after **LOADING** and before **READY**.

```

01 100 GETT DRDLG0
02 140 0-01 N00
03 160 0000 ACT00T
04 180 0-01 F000-0100
05 170 0000 00-00 00-00 00-00 00-00
06 190 0000 00-00 00-00 00-00 00-00
07 210 0000 00-00 00-00 00-00 00-00
08 230 0000 00-00 00-00 00-00 00-00
09 250 0000 00-00 00-00 00-00 00-00
10 270 0000 00-00 00-00 00-00 00-00
11 290 0000 00-00 00-00 00-00 00-00
12 310 0000 00-00 00-00 00-00 00-00
13 330 0000 00-00 00-00 00-00 00-00
14 350 0000 00-00 00-00 00-00 00-00
15 370 0000 00-00 00-00 00-00 00-00
16 390 0000 00-00 00-00 00-00 00-00
17 410 0000 00-00 00-00 00-00 00-00
18 430 0000 00-00 00-00 00-00 00-00
19 450 0000 00-00 00-00 00-00 00-00
20 470 0000 00-00 00-00 00-00 00-00
21 490 0000 00-00 00-00 00-00 00-00
22 510 0000 00-00 00-00 00-00 00-00
23 530 0000 00-00 00-00 00-00 00-00
24 550 0000 00-00 00-00 00-00 00-00
25 570 0000 00-00 00-00 00-00 00-00
26 590 0000 00-00 00-00 00-00 00-00
27 610 0000 00-00 00-00 00-00 00-00
28 630 0000 00-00 00-00 00-00 00-00
29 650 0000 00-00 00-00 00-00 00-00
30 670 0000 00-00 00-00 00-00 00-00
31 690 0000 00-00 00-00 00-00 00-00
32 710 0000 00-00 00-00 00-00 00-00
33 730 0000 00-00 00-00 00-00 00-00
34 750 0000 00-00 00-00 00-00 00-00
35 770 0000 00-00 00-00 00-00 00-00
36 790 0000 00-00 00-00 00-00 00-00
37 810 0000 00-00 00-00 00-00 00-00
38 830 0000 00-00 00-00 00-00 00-00
39 850 0000 00-00 00-00 00-00 00-00
40 870 0000 00-00 00-00 00-00 00-00
41 890 0000 00-00 00-00 00-00 00-00
42 910 0000 00-00 00-00 00-00 00-00
43 930 0000 00-00 00-00 00-00 00-00
44 950 0000 00-00 00-00 00-00 00-00
45 970 0000 00-00 00-00 00-00 00-00
46 990 0000 00-00 00-00 00-00 00-00
47 1010 0000 00-00 00-00 00-00 00-00
48 1030 0000 00-00 00-00 00-00 00-00
49 1050 0000 00-00 00-00 00-00 00-00
50 1070 0000 00-00 00-00 00-00 00-00
51 1090 0000 00-00 00-00 00-00 00-00
52 1110 0000 00-00 00-00 00-00 00-00
53 1130 0000 00-00 00-00 00-00 00-00
54 1150 0000 00-00 00-00 00-00 00-00
55 1170 0000 00-00 00-00 00-00 00-00
56 1190 0000 00-00 00-00 00-00 00-00
57 1210 0000 00-00 00-00 00-00 00-00
58 1230 0000 00-00 00-00 00-00 00-00
59 1250 0000 00-00 00-00 00-00 00-00
60 1270 0000 00-00 00-00 00-00 00-00
61 1290 0000 00-00 00-00 00-00 00-00
62 1310 0000 00-00 00-00 00-00 00-00
63 1330 0000 00-00 00-00 00-00 00-00
64 1350 0000 00-00 00-00 00-00 00-00
65 1370 0000 00-00 00-00 00-00 00-00
66 1390 0000 00-00 00-00 00-00 00-00
67 1410 0000 00-00 00-00 00-00 00-00
68 1430 0000 00-00 00-00 00-00 00-00
69 1450 0000 00-00 00-00 00-00 00-00
70 1470 0000 00-00 00-00 00-00 00-00
71 1490 0000 00-00 00-00 00-00 00-00
72 1510 0000 00-00 00-00 00-00 00-00
73 1530 0000 00-00 00-00 00-00 00-00
74 1550 0000 00-00 00-00 00-00 00-00
75 1570 0000 00-00 00-00 00-00 00-00
76 1590 0000 00-00 00-00 00-00 00-00
77 1610 0000 00-00 00-00 00-00 00-00
78 1630 0000 00-00 00-00 00-00 00-00
79 1650 0000 00-00 00-00 00-00 00-00
80 1670 0000 00-00 00-00 00-00 00-00
81 1690 0000 00-00 00-00 00-00 00-00
82 1710 0000 00-00 00-00 00-00 00-00
83 1730 0000 00-00 00-00 00-00 00-00
84 1750 0000 00-00 00-00 00-00 00-00
85 1770 0000 00-00 00-00 00-00 00-00
86 1790 0000 00-00 00-00 00-00 00-00
87 1810 0000 00-00 00-00 00-00 00-00
88 1830 0000 00-00 00-00 00-00 00-00
89 1850 0000 00-00 00-00 00-00 00-00
90 1870 0000 00-00 00-00 00-00 00-00
91 1890 0000 00-00 00-00 00-00 00-00
92 1910 0000 00-00 00-00 00-00 00-00
93 1930 0000 00-00 00-00 00-00 00-00
94 1950 0000 00-00 00-00 00-00 00-00
95 1970 0000 00-00 00-00 00-00 00-00
96 1990 0000 00-00 00-00 00-00 00-00
97 2010 0000 00-00 00-00 00-00 00-00
98 2030 0000 00-00 00-00 00-00 00-00
99 2050 0000 00-00 00-00 00-00 00-00
100 2070 0000 00-00 00-00 00-00 00-00

```

```

04 940 DATA 1,141,13,800,141,13
    980,173,13,800,173,13,800,1
    80,80,141,1400
08 950 DATA 0,3,800,800,371,21,
    3,100,1,170,80,800,80,70,100
    1,100,1000
12 960 DATA 800,800,100,1,170,70
    30,51,100,100,74,34,300,100
    0,170,1000
16 970 DATA 0,100,20,100,0,100,
    70,70,70,100,0,70,800,800,80
    0,800,1000
20 980 DATA 800,800,100,13,30,21
    0,800,100,0,70,800,800,30,80
    0,100,1000
24 990 DATA 13,30,800,800,70,101
    0,100,0,70,80,800,100,0,141
    1,100,1000
28 000 DATA 70,70,100,800,100,0
    171,171,800,70,110,800,100,
    1,141,171,8000
32 010 DATA 30,100,0,30,110,
    800,171,70,800,171,100,170,0
    0,800,100,1000
36 020 DATA 800,800,0,100,100,17
    1,100,800,70,1,100,70,100,70
    30,80,1000
40 030 DATA 100,100,70,100,70,30
    000,800,30,51,100,80,100,800
    0,70,171,8000
44 040 DATA 10,30,1,10,30,0,
    800,20,70,100,800,100,80,70,
    100,800,1000
48 050 DATA 70,110,800,30,0,0,0,0
    0,0,70,171,800,0,30,171,
    800,30,8000
52 060 DATA 100,70,171,800,0,0
    1,100,0,30,110,800,171,800,0
    80,100,1000
56 070 DATA 70,800,800,100,100,
    100,0,110,141,110,800,10
    0,0,800,10,1000
60 080 DATA 70,170,0,100,70,
    800,800,0,0,171,110,800,100,
    70,100,70,8000
64 090 DATA 100,100,800,70,80,800
    0,30,110,0,30,110,800,171,0
    0,800,1000
68 0A0 DATA 10,100,170,30,800,1
    30,100,100,1,100,100,100,0,0,
    100,0,100,1000
72 0B0 DATA 0,0,0,0,0,800,70,80,
    800,70,80,800,0,0,0,0,0,0,11
    0,0
76 0C000 DATA 700
78 0C005 DATA 0000
80 0C007 DATA 7000"00000",0,1
82 0C008 DATA 100,100,0000,0000
    00,00->0000100000000
86 0C00C DATA 70,100,0000,0000
    70,00->0000100000000
90 0C010 DATA 0000000

```

- LOAD & RUN

< filename > - Load filename from current device into Basic memory and RUN it immediately afterward. If a **LOAD ERROR** occurs it will not be RUN. See above if in error.

% - VERIFY

% < filename > - Verify that program currently in Basic memory is the same as < filename > on disk in current drive. If the verify is successful (they are the same), no message appears between **VERIFYING** and **READY**. If they are not the same you will get **VERIFY ERROR**.

! - APPEND

! < filename > - Since the KERNAL load routine is capable of **LOADING** to anywhere in memory, there's no reason why we can't include this very powerful utility. Armed with the ! command it is now easier to create a library of Basic program modules, or to write a program in pieces, each tested and debugged individually, as this saves time and is more convenient, and is less confusing. It also encourages structured programming, writing each piece of a program as a subroutine. The important thing to remember about **APPENDING** though is that you must ensure that the next block of Basic text appended has higher line number than that already in memory. It won't prevent a being loaded but the interpreter can't access the lines above the point where lower numbers are found. If a **LOAD ERROR** occurs, then you've got a slight problem - the append process starts by decrementing the Basic variables pointer **PARTIAL** by two, to bring it in line with the true end of the program in memory and to use it as a starting address. If the load failed and **APPEND** is re-attempted, **PARTIAL** is further decremented by two. If at the second attempt the load was successful, the the new data will crash over the end of the already existing program. To prevent this re-define **PARTIAL** with the **OLD** routine, before re-attempting **APPEND**.

- SAVE

< filename > - Save program in memory as filename to current drive. The DOS error message follows automatically. If the save failed it could well be **FILE EXISTS** for example. Note **PARTIAL** is used to indicate where the end is. If its value has altered for any reason (actually a surprisingly common occurrence, and not just through using non-standard methods like programmed **APPEND**) then either not all of the program will be saved (**PARTIAL** fails short) or some of the variable storage area will be saved with it. Ever loaded a program, **RUN** it and have it crash? On **LISTING** it's found to have turned into gibberish? This is the kiddle at fault. The **OLD** routine will make it too the line through.

Warning

All of the **LOAD**, **LOAD & RUN**, **VERIFY** and **APPEND** functions have the effect of redefining **PARTIAL**. This is done correctly unless an error occurs. If for example a verify fails, **PARTIAL** will end up reflecting the point where the end of the program verified on disk would have been if it had been loaded, and not where the program in memory is now. If a **LOAD** failed then it will have a stupid value, like an address in next page memory (duh). But good old **OLD** will come to the rescue. Also all **LOAD**, **VERIFY** and **APPEND** processes retain **BASIC** lines and perform an automatic **CLR** on completion.

The Function Keys

program. It would be nice if it were possible to simply force the machine to direct mode Basic and leave the screen alone, so that we can still read our printed variables, etc.

Did you know that the [RESTORE] key alone is the thing that generates the NMI? Normally nothing apparently happens, because the KERNAL routine handling the NMI first examines the keyboard to see if the [STOP] key is down. If it is, then the warm start is performed. If it's not, then no changes are made and the C64 carries on as though nothing had happened.

The first part of the custom NMI routine is a duplicate of that of the KERNAL NMI Handler, with the difference that if the [STOP] key check is false then our custom interrupt is performed. If the [STOP] key is down then the routine is carried out by the KERNAL exactly as standard.

If the [STOP] key is not down then we get instead:

INTERRUPTED

READY.

INTERRUPTED is printed in yellow, **READY.**, and all further text typed, in white. The screen remains intact and no drastic memory changes are made, other than that the custom NMI vector is reselected (this isn't actually necessary, but the routine is also used to install itself).

Try this.

POKE 4948,16:POKE 4916,16:POKE 4916,16.

Now **SYS 4916.**

What's happening now is that the C64 is trapped in an endless machine code loop. Tap [RESTORE] to bring it back. Note your **POKEs** are still on screen.

The OLD Routine

Of all the keywords the C64 hasn't got, the one it could really do with is **OLD**. **OLD** is the opposite of **NEW**, but as hinted beforehand, it's not just a means of recovering a listing that has been **NEWed** by mistake. Whether **NEWed** or not, it effectively cleans up a Basic program in memory by re-chaining it and redefining its pointers. It doesn't seem likely that these should be corrupted but it can happen in the process of constant text running and re-editing, and particularly where lines are added or deleted without typing CLR first. In these circumstances it is possible for poor old **VARTAB** to get a bit confused, resulting in the interpreter trying to make sense out of something which is actually a variable, or a large chunk of rubbish appearing between the end of the program (usually terminated properly so it RUNs OK) and the variables, and which is **SAVED** with the program! It's happened to me several times.

If **NEWed**, the listing hasn't actually disappeared. All that's happened is the first two bytes of its storage have been moved, and two more bytes in a position where a pointer to next BASIC line should be seen end of program. The "OLD" routine inserts a dummy value in these, which doesn't matter as the BASIC reclaim routine is then called to sort it out.

It gets better. Try this - load a program with / filename and press the reset button if you have one, or else type **SYS 4478** (ensuring that the machine will reset in standard form). Either of these actions simulate a 'cold start', what you get when you switch on the C64. I bet you think everything has been wiped out...don't you? Not so. It's true that one of the functions of the 'cold start' is to perform a memory test, but this is of a non-destructive nature and in any case is only used to find out where the Basic ROM is so that the top of Basic memory can be defined. In actual fact the only way to erase the memory completely is to switch the machine off.

Now type **SYS 5297.**

Look, you didn't get a 'warm start' (like [RUN/STOP/RESTORE]) so the **OLD** routine is still there. Now **LIST**. Hey presto, the Basic program is still there too! Now you can get out of major problems with the reset button and not lose everything.

So that's **DOSMAN** et al. It's highly probable that you may quickly feel helpless without it. I know I am.

DOSMAN Memory Map

SCA48	51761	DOPUNC
SCAC4	51808	FUTREY
SCADA	51836	FLINT2
SCAEF	51931	TRACON
SCAF2	51954	TRACOF
SCB01	51969	ONMSG
SCB0C	51980	OFFMSG
SCB48	52040	OUTMSG
SCB5A	52058	TENTRY
SCB76	52080	NMICUS
SCB85	52197	OLD
SCC08	52204	DOSMAN
SCC00	52227	VECTAB
SCC13	5224	COMTAB

Entry for custom IRQ. Test if function key down, and process as necessary. If not service IRQ as normal.

Copy string pointed to by x, y into keyboard buffer until closing 'Y'.

"SYS\$185[RETURN]"0.

"SYS\$145[RETURN]"0.

SYS here for [TRACE ON].

SYS here for [TRACE OFF].

[TRACE ON]"0.

[TRACE OFF]"0.

Print string pointed to by x, y all closing 'Y'.

Display BASIC line No. while [TRACE ON].

Install/refresh/perform custom NMI.

SCBCJ 52963 IRQCES
Install/refresh custom IRQ for function keys.

SYS here for "OLD" routine.

SYS here for install DOSMAN, custom NMI and function keys.

Primary DOS command jump table.

List of primary DOS commands.

SCCIB	52281	BUFFER	DOSMAN input buffer.
SCCTJ	52339	FLAG	Mode flag for LOAD/LOAD & RUN/VERIFY APPEND.
SCCTJ	52343	DEVICE	Copy of current device number.
SCCTN	52345	Temporary storage of disk directory sector count.	
SCCTB	52347	BASTAB	"LIST[RETURN]"0, "LIST"0, "RUN[RETURN]"0, "GO"0"0, "CONT[RETURN]"0, "SYS\$291[RETURN]"0.
SCCAE	52362	GETVAL	Get numeric value from BASIC line into \$14 - \$15 hex.
SCCBH	52409	FLIST	Table of BASTAB address pointers.
SCCCB	52427	NWTRD	"INTERRUPTED"0.
SCCDE	52446	CODE	Storage of code to wedge CHRGET.
SCCEI	52448	INSTAL	Wedge CHRGET and install DOSMAN.
SCCFJ	52467	ENTRY	CHRGET jumps here to test for DOS commands.
SCDJS	52553	COMM	Process recognized primary DOS command.
SCDDJ	52541	GETERR	Get and display current device error message.
SCD68	52584	SENDCH	Send command string in buffer to current device.
SCD6E	52596	READ	Input BASIC line into buffer.
SCDA5	52643	GETCHR	Just like CHRGET, but doesn't ignore colons.
SCD9A	52666	CHADEU	Change current device number in memory.
SCDCA	52682	RESTOR	Restore CHRGET to normal, disables DOSMAN.
SCDDC	52706	GETDIR	Get and display disk directory from current device.
SCD6H	52813	LOADL	Load BASIC prog.
SCD69	52841	LOADR	Load and run BASIC prog.
SCD7I	52849	LOADU	Verify BASIC prog.
SCDAD	52866	LOAD/LOAD & RUN/VERIFY/APPEND error handling.	
SCDCA	52918	APPEND	Append BASIC prog. to memory.
SCDPC		SAVE	Save BASIC prog. in memory to current device.

RESET CIRCUIT

Make your own reset
circuit easily and
cheaply

By B. Leerkotte

One of the most infuriating design faults of the C64 is that Commodore omitted a reset button. If you do not own a suitable cartridge, you are constantly at the mercy of power surges and power losses. How many times have you 'lost' that all important program (the one that you have not bothered saving yet)? If you are one of those unfortunate, then this article is for you. It will show you how, with a little effort, you can build your own.

The reset is achieved by pressing the restore key for approximately 5 seconds.

The circuit must be installed in the R/E-circuit which normally triggers the reset-timer U20. The circuit replaces the resistor R50 (1M Ω).

The theory

The moment that the Restore key is pressed, capacitor CR1 is charged by way of resistor RR3. The voltage on the trigger-input 8 of U20 will fall. When that voltage reaches the trigger voltage of 1.5V, the timer U20 gives a reset pulse.

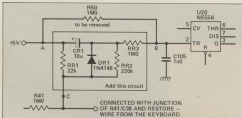
If the Restore key is released before U20 triggers, capacitor CR1 will be discharged rapidly in approximately 0.3 seconds. Therefore, it is impossible to reset the C64 by repeatedly pressing the Restore key; the Ram/Scop-Reset or Non Maskable Interrupt will function as before.

Installation

The circuit is reliable and is easy to build on a square-pad board. It is also easy to install into the C64.

Remove resistor R50 (1M Ω) and connect wire A to the left solderpoint which came from. Wire B is connected with the right solderpoint (see diagram). Point C must be connected with the right side of resistor R41. Now point C is connected the Restore key.

You should now have a functional and reliable reset source.



WHIPCRACKAWAY

**Commodore Crusader
Kevin Crosby dons his
hat and bullwhip to
report on the latest
installment in the
Indiana Jones saga**

Left: Indy (Harrison Ford) prepares himself for action. Life as an archaeologist is not all digging.



Above: Things heat up for messers Jones and Jones.

"Somehow the audience always seem to be able to go 'ugghh yukky-poo' whilst still keeping a smile on their faces."



Above: "Last one to the pulp is a rotten turkey!"

Phow! I've just come back from my local (cinema, not pub - this time!) and what a film!

I am, of course, referring to the third and reportedly the final film in the Raiders series - *Indiana Jones and the Last Crusade*.

Once again Harrison Ford plays the slightly asundered Archaeologist cum Grave Robber who stops at nothing to claim the ancient treasures he seeks. This time though we have a second Dr Jones to deal with in the form of Sean Connery, who plays Indy's Father Henry.

"Crusade" fits in around the previous two films *Raiders of the Lost Ark* and *Indiana Jones and the Temple of Doom*. The first part is set in 1912 where a Boy Scout sized Indy (played by River Phoenix) has one of the first adventures in his career. These comes in an excellent job in tying together some of the mysteries in Jones' past like his choice of bullwhip as his main weapon, his fear of snakes and the curious scar on his chin, etc. Nice touch that I thought.

The action soon works its way up to 1938 where the Harrison Ford-aged Indy realises the crucifix which was denied him 26 years previous, not for personal gain but for the good of the Institute that he teaches (how noble!). However events take a turn for the worse when Indy receives his father's notebook on the whereabouts of the Holy Grail - the fabled chalice that gives the holder a prize even better than a year's subscription to *Your Commodore* - the gift of eternal life.

As this quest was his life's obsession Indy is understandably puzzled as to why his Father has sent it to him. Things soon fall into place when an American Art Collector by the name of Walter Donovan (played by English actor Julian Glover) informs Indy of his Father's disappearance and asks for his help in finding him by tracing the route mapped out in the notebook. There are, of course, some vital pieces of information missing which Indy must find out before he has a chance of finding his Father.

This initially takes Indy and his Cousin Marcus Brody (played once again by Denholm Elliott) to the town of Venice where they meet up with Elsa, the token female in the film (played by the stunningly attractive Alison Doody) who once helped Jones the Elder on the same journey before his kidnapping. And, as is customary in an Indy film, gruesome scenes involving creatures which many would not exactly trade their Cars for (in this case Rats) are used, but somehow the audience always seem to be able to go "Uggh Yukky-Poo" whilst still keeping a smile on their faces. A quality present in little other than Spielberg films.

Anyway, one thing leads swiftly to another and Jones the Younger is off to the mountains of Austria to rescue dear old Dad and to help him fulfil his life long ambition - To find the Holy Grail.

Once father and Son are reunited they very quickly become one of the silver screen's most endearing family teams. You could certainly tell that both Sean Connery and Harrison Ford were really enjoying themselves whilst making this film. I expect to see more films, not necessarily in this series, with Ford and Connery teamed up as they certainly work well together on screen.

Excellent performances too from Denholm Elliott and John Klys Davies who both recreate their characters from the first film. Nice to see them back.

No prizes for working out that good triumphs over evil but in this sort of film you don't sit there wondering who will win just how they win.

As is to be expected the stunt work and set pieces are just as good, if not better, than their predecessor's although I have to admit that the special effects were more noticeable in this particular installment especially during the scenes involving the Zeppelin and the aerial dogfights.

However, that gripe aside, a positive thumbs up for *Indiana Jones and the Last Crusade*. It has succeeded to capture much of the atmosphere of the first film whilst not forgetting the humour that was much more prevalent in the second.

Messrs. Spielberg and Lucas deserve several dozen Browne points plus a free subscription to *Your Commodore* (what such! - Ed) for their sterling efforts.

AMERICAN INDOOR SOCCER

Soccer in the states is mostly played indoors by six-a-side teams. Here's your chance to play, manage and coach in the American Indoor league.

Mindscape - £14.99 Disk

THE American Indoor league is the only way to play soccer in the US but this doesn't mean that it lacks any of the skill or excitement of the 11-a-side game. In fact, it's faster and more exciting on the players, but you must select well: you can substitute as well to keep the action fast and furious. However, selecting subs is the only job for you in this game. You can also act as centre forward, goalkeeper, centre midfield and general manager.

At the start of your campaign, the role of general manager is the most important: your squad is to be the equal to your nearest group and the twelve team league. If you've going to have any chance of reaching

the end of season playoffs you must think for the players. As you begin the game you have 100 trading points to either train your team or trade for a better player with a skill level between 40 or 100 which would bring far better than your present average of 25 to 30.

On the field you pass, drift, tackle and shoot as you would in any other football game, except that your forwards can head the ball and show off with over-head kicks although the play can be broken up by entirely random penalties, falling even the best laid match plans.

Whenever there is a free kick or when the keeper gathers the ball, the coaches'

screen appears which allows you to make substitutions and decide attack and defence tactics, ranging from passing to shooting for the forwards and all other players to support the attack for the defence.

The game shows a lot of promise but it may all sound just hush to you. Particularly if you've played *Granite's Gals*, *Linearity*, *Supersonic Soccer*, it was exactly the same thing as you've seen. The only difference being the number of players on the pitch. This is because the game *Design Sports* produced both games with a chance they didn't write two different games.

SuperFline, the game developer, also wrote *Indoor Soccer* and *Clubhouse Soccer*.

INFO

Gameplay: 50%
Graphics: 46%
Sonics: 35%
Lastibility: 40%
Overall:
43%

Tony Hetherington



INDIANA JONES THE LAST

The man in the hat is back again and this time he's brought his dad! That's how they trailed the latest adventure of Indiana Jones. Now it's a computer game.

Lucasfilm (US Gold) - £24.99

Below: The cross of Coronado? Is that the same as the Walnut Cross?

INFO

Gameplay: 65%
Graphics: 60%
Sound: 45%
Lastability: 55%
Overall:

56%



cross of Coronado. While their backs are turned Indy grabs the cross and runs. On screen the caves are full of platforms, ropes to climb and bad guys armed with guns. If you're going to survive you'll need torches so you can see where you're going and whips to battle your way through to the exit. Then the chase continues on top of a circus train packed with really wild animals. This is where Indy learns to use a whip for the first time.

It is now 1938 and Indiana Jones is racing the Nazis to find the Holy Grail. His only clue is his father's Grail diary that leads them both underground into the rat infested crypt of a Victorian church where they hope to find the grave of a Grail knight. After storming a castle to rescue his dad, and escaping in a Zeppelin, Indy arrives at the final and best part of the game as he enters

YOU'VE seen the film now play the game, that's the message from Lucasfilm as it launches a platform style arcade game for the Amiga, with other versions to follow

shortly. This is, in fact, just one of two games that will be based on the film, the other being an arcade adventure produced by Lucasfilm.

The arcade game is based on five sequences from the

film and plots Indy's progress from a scout through to his final crusade for the Holy Grail. As the game opens he has just entered the mine complex in which thieves are stealing the silver

ONES AND CRUSADE



the Goo Temple. Here he must pass three challenges called the Breath of God, the Word of God and finally the Path of God. These challenges become puzzles that must be solved with your joystick if you are to reach the Goo.

Lucasfilm hasn't taken any chances by using the tried and tested platform style of game but with the whip cracking action it seems to suit the style of the film. Add a reasonable rendition of the Indiana Jones theme and you've got a game that's a lot of fun to play.

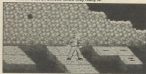
Tony Hollingsworth

Lucasfilm is the software production part of the company owned by George Lucas, who is one of the major moguls behind the film.



Above: Everybody's got skeletons in the closet.

Below: What an athletic fellow Indy really is.



Below: Underneath the arches!



Cartoon Capers
and animation antics
abound with this latest
release from Magic Bytes



ANYONE who has read more than a few of my reviews will know that I have little time for licensed games. All too often, money that could usefully have been used in developing the product is spent on acquiring the rights to a film, television series or whatever. And the amounts that we are talking about are not peanuts.

The latest licensed title to come my way is Tom and Jerry from the German Company Magic Bytes and I am afraid that it does little to improve my above mentioned view. Just the opposite in fact.

The idea behind the game follows that of the cartoons reasonably well. Mouse goes looking for food. Cat sees mouse. Cat chases mouse. Cat catches mouse. Mouse escapes. Cat gets his comeuppance.

Here, Jerry is out looking for lumps of his favourite cheese, scattered around five different rooms. He has to collect as much as possible in the allotted time, bouncing off items of furniture in the manner of the platform days of old. The rooms are connected via a series of

tunnels where you can gain or lose extra time by picking up either cheese or explosives.

Tom, on the other hand is doing his best to stop Jerry by grabbing him whenever he can causing Jerry to lose 30 seconds of his time allowance. Jerry can drop things on Tom's head to keep him quiet for a while or can distract him by, for example, turning on the television.

Jerry's favourite cheese is full of holes. Unfortunately, the gameplay suffers from a similar problem. To start with, there is no scoring system in the game. Apart from there being no incentive to play, you have no idea

as to how well or badly you are doing. This in turn affects other elements of the gameplay. For example, it now becomes pointless to try to stop Tom. The time spent in setting up an 'accident' could better be spent trying to pick up more cheese.

The tunnel sequence does not work at all well at all. The dynamite explodes as soon as you look at it, let alone touch it. Trying to jump past the furniture is a lottery. Identical pieces may make you climb over them or allow you to walk underneath them. When Tom catches you, you get repositioned randomly on the screen that you are on. It is

quite possible that you will be put in a dead end and have to wait for Tom to come and kill you again - a wonderful bit of game design I don't think.

The manual has been translated from the German by someone who can't speak English. It is littered with spelling mistakes (so is the game) and two of the pages are printed out of order.

I can't write any more mainly because I don't know that many bad words. All I can say is don't waste your money.

Magic Bytes -
£9.99 Tape,
£14.99 Disk

INFO

Gameplay: 15%
Graphics: 55%
Sound: 40%
Valueability: 20%
Overall:

33%



Alas, but Jerry you can't drive, you're only a mouse



Above: You shall have a fishy...



Above: No, it's not Rakeitastic simulator!

THE summer season had come to Amity Island and thousands flocked to its beaches unaware of the terror that swam just below the calm seas. A great white shark was now feeding in these waters and it was feeding on people.

At first they thought the victim's wounds were caused by boating accidents but now you, Hardy - Chief of Police, the job of ridding the island of this menace. Together with Quint, a shark fisherman, Hooper, a shark expert, and three expert divers you set off to kill jaws. Unfortunately, the special gun and its bullets that will kill the monster shark were on a boat that struck the reef and sank, so your first task is to dive down into the dangerous water and find them. To add to your troubles Mayor Vaughn has refused to close the beaches and hopes to cover it up until you kill the shark, but you

must hurry, if seven swimmers are chopped you'll be sacked and the game will be lost.

One by one, your six divers climb into the diving bell and dive down into the depths of the reef to search for the four parts of the gun and the four super bullets that will kill Jaws. This isn't easy as the waters are teeming with hostile plants and fish out to eat you, if you think they're trouble just wait until you see Jaws. Luckily you'll also find useful objects to help you, such as extra air to top up your dwindling supplies, mines and bombs to clear canyons, bullets for your gun and treasure to add to your score and collection.

Eventually you'll gather all the gun bits and ammo you need but your challenge is far from over as you have score three hits on the great white shark or start all over again.

The game is quite fun to play but there's one thing I can't understand; why has Screen 7 gone to trouble of getting the rights to a film and then produce a game that has little to do with it? Tony Hetherington

At last, the cult film of the seventies that terrorised countless cinema audiences has now appeared on the computer screen.

Screen 7 - £9.99

Jaws is the debut game from new software house Screen 7.

INFO

Gameplay: 65%

Graphics: 43%

Sound: 38%

Lastability: 64%

Overall:

53%

LIFE AND DEATH

Has the NHS fallen so low that they'd let a complete lunatic like Duncan Evans into the wards? Oh no, they have.

Mindscape - £29.95 Disc

There's no need to be afraid dear, this won't hurt at all... Aaaaarrghhh! Oops, did I forget to turn the gas on? My mistake, still, she was getting on, and we did need the beds.

Every fan you ever had about going into hospital is going to be realised when you play Life and Death by Software Toolworks. Thankfully in this game you are that mad-eyed surgeon, and it's the other patients who are there to suffer. And suffer they do, as you blunder through medical training, leaving the wards empty and the morgue packed.

Life and Death is all about surgery, progressing from being a naive scalpel apprentice, to mastering the appendectomy before assaulting that granger of organs, the heart. Still, it'll take you some time, and loads of patients, before you get that far.

It all starts with you signing in at reception, under the watchful eye of Monica, before heading to the staff room to pick up your accoutrements for the

room of doom, aka the operating theatre. There are six persons on hand in total, each represented by a file and digitised pic, of which you must pick two.

Then you're off to the classroom for an introductory speech, and a few hints and tips on general surgical practices.

After answering a phone

call, which doubles as the copy protection scheme, you get your first patient. Time to don the rubber gloves and face mask that come with the game! First examine the poor thing by prodding them in every section of their midriff and abdomen - if there's any pain there a sampled signal instils it in.

Have a look at their

record chart and look up the symptoms, and decide whether to operate, administer antibiotics, refer them



EATH

to another doctor, go to X-ray, observe or use the ultra scan. For the first half of a dozen patients you'll probably make the wrong choice and end up back in the classroom being told so. At

least you'll know better next time, and your victims never get a second opportunity.

Eventually you'll get a case where you have to operate, and this is where the real fun starts, as it involves injecting drugs to counter blood pressure loss and heart wobbling, setting up glucose and blood drips, and

using all manner of fiendish implements to peel back layers of flesh as you head for the appendix.

The trouble is in finding the damn thing, and avoiding cutting into the Colon, which is messy. If you have a mouse connected to your PC it makes for easier surgery, as you often have to react very quickly.

There is a kind of perverse fascination in this game, this slice and diceopic,

where the demise of a patient is simply irritating, and the pleasure comes from seeing how far in you can get before cooking it all up.

The CUA four colour graphics are excellent, and are wonderfully complemented by the sampled screams, and the best news is that the Amiga version should be ready about now.

INFO

Gameplay: 87%
 Graphics: 85%
 Sound: 73%
 Usability: 80%
 Overall:
86%

Software Technology is best known for its Classroom 2000 and 2100 programs, and is providing a brain surgery sequel in Life & Death.

Profile of Dr. Ben Shepherd

Technical: Dr. Shepherd's area of expertise is cardiology. During an operation, he will keep an eye on the patient's ECG. When the ECG becomes abnormal, he will inform the surgeon and recommend a course of action.

Personal: Dr. Shepherd gets along with most of the other staff members. He works particularly well with Kimberly Brown.

Ben Shepherd
 Title: Cardiologist
 Specialty: Cardiology

Left: Slice, maim and chop. All in the name of medicine, of course. Now, where did I place that kidney?

SET in Paris the game puts you in charge of a six-man assault team containing three commandos and three marksmen. Your targets are terrorists that have seized an Embassy and it's your job to rescue any hostages.

In a two stage game you must set up your marksmen before sending in the commandos. However, the ter-

rorists have the surrounding streets covered with searchlights so your marksmen must run, crawl and crouch and out of any windows that come in the windows. However, you must be sure that they're terrorists and not hostages before you open fire. Once the immediate area is cleared you descend in the heavy rain.

The commandos enter the building by shooting from the roof and climbing through the windows. They must then clear the spaces of terrorists. Inside, the screen changes to show a 3D view of the room or corridor you're currently in and a map that plots the terrorist's movement. Now you have to think quickly to gun down terrorists while avoiding any injury to the hostages. When you find a hostage you must escort him to a safe room on the third floor and protect them from terrorist attack by moving in front of your team. As in a real assault good tactics and the speed and skill of your team will decide the outcome. Perhaps the toughest challenge is when a terrorist is hiding behind his hostages. There you have to make your shots count and that will take some practice.

Several levels of difficulty and the ability to play either half of the game separately will mean you'll keep coming back for more. Tony Hetherington

INFO

Gameplay: 88%
Graphics: 72%
Sound: 32%
Lastibility: 75%
Overall:

67%

Ever since the SAS stormed the Iranian Embassy in 1980 we have waited for a game that captured the atmosphere of such a raid. Here it is.

Below: We'll have no cigarette adverts in this mag.



Hostages is the latest game from Infogrames, the company that brought you the wild and wonderful *Captain Blood*.

**Infogrames £9.95
Tape, £14.95 Disk.**



Above: Blast him, Maim him, Murder him, Hang on a sec, that's a hostage! Ah, shoot him anyway...

Pinball games are few and far between, so any new ones will be welcomed by digital pinball wizards. Unfortunately, this one is way off target.

TIME SCANNER

By Electric Dreams -
£9.95 tape

TIMESCANNER is the long-awaited conversion of the successful coin-op based on pinball. In the game you have irresistibly fallen into a time warp and the only way out is to complete four pinball tables. To add to your problems you have to complete three of them before you get a chance to play the fourth.

Each table has a theme and an objective. For example, on the Volcano table you must light up the letters in the word Volcano by hitting a transparent chair until finally the volcano erupts. Unfortunately, this makes the other targets, bumpers and rollovers quite redundant. The same is also true of the Ruins and Saguash (Egyptian) tables.

Another problem is that the tables are in two halves of a scrolling screen and it's almost impossible to get the ball from the bottom half back to the top. This can be important since the targets you must hit in the Saguash table are all in the top half of the table; so are the two chairs that transport you to the other tables.

Unfortunately, things get worse as the game's graphics and speed are more in line with a 64K Spectrum game than a 64K C64 and the suspicion must be that all 8 bit versions have been de-



igned with the Spectrum in mind.

The reward for finally, slowly and painfully completing a level is the release of two other balls so you can play with those at once

(which slows the game down, if that's possible) so that it takes several seconds for a ball to hit the top of the screen and bounce back to the flippers.

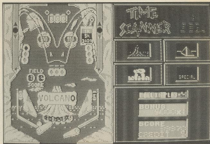
Tony Hetherington

INFO

Gameplay: 32%
Graphics: 22%
Sound: 42%
Lastibility: 28%
Overall:
28%

Amstrad has enjoyed considerable success recently with a string of hits. This isn't one of them.

(Below: Do you think that this screen is, perhaps, the Volcano Screen?)



US Gold - £9.99

As part of the Dungeons and Dragons deal, US Gold has created a game to bring role playing to the masses.

HEROES OF THE LANCE

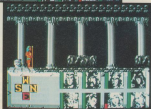
CREATE a computer game based on Dungeons and Dragons that will appeal to arcade players. That was the challenge put to US Gold as its part of the three cornered deal withSSI and D&D authors TSR. This is the result and it's a game that's played entirely with a joystick.

Unlike the other D&D games that are based on the Forgotten Realms, Heroes of the Lance is based on the Dragonlance series of books and game modules that came about because players of the role playing game demanded more dragons in Dungeons and Dragons. This game features an ancient black dragon called Khisanth who guards the platinum disks of Mishakal. These disks are your only hope of restoring faith in the old Gods and foiling the evil Queen of Darkness' plan to rule the world.

The disks lie deep in the ruins of the Temple of Kik Tazanth which is now rift with Gully Dwarfs, giant spiders, undead and Draconians (a human dragon half breed created by the evil Queen). You control eight brave adventurers although only one appears on the screen at any one time. Your party has the usual mix of fighters and spell casters which, in this game, are given their spell power through two staves. Raicela is the magic user and holds the staff of Magic which has 100 charges and can cast spells such as sleep, magic missile and charm (sapping one character and web the rest). Goldmoon carries the clerical blue moon staff that



Left: I wonder if the staff of Magic is as handy as the staff of Argon.



Below: Your Commodore - full of interesting columns.

has 200 charges and can cast spells ranging from the ubiquitous cure light wounds (1) to Raise Dead (5) and the useful defend dragon breath (5).

The action takes place on a sideways scrolling screen with a compass that lights up when you reach a junction. This can be a little confusing, but since the game's in real time you haven't time to draw accurate maps. Com-

bats is fast and furious, with joystick movements deciding whether you cut, slash or parry, or fire an arrow; crossbow in a distance attack. Should you resort to magic then the spaci bar flashes the game and presents a series of menus from which you can cast spells, pick up, drop and use objects and examine and select heroes.

Tony Hetherington

INFO

Gameplay: 67%

Graphics: 55%

Sound: 42%

Usability: 48%

Overall:

53%

TREBLE CHAMPIONS

Challenge Software - £9.95 Tape

And so the footy season starts again. To coincide with this momentous occasion, Challenge Software deals us a dose of soccer management to test even Kenny Dalglish himself.

Challenge Software's first title to come our way is Treble Challenge, a football management game that seeks to expand the foundations laid by Football Manager and more recently, Football Director II. The latter game is a hard act to follow, and the only way to do so would be to better it in every respect. Challenge has succeeded this with a few features to increase the realistic aspect of games of this ilk.

The goal (no pun intended) in Treble Champions is a very familiar one: win the league division one, the FA Cup and the League Cup (hopefully all in the same season) and thus prove what an outstanding manager you are. This is done by manipulating players, managing the transfer market

to improve the quality of your team, and other duties chores performed by football managers.

Players have skin, height, fitness and possession all of which affect the outcome of matches. The matches are played with the clock ticking away, and a table constantly updates how many points the club was in each week's competition. The amount of time and goals that a team has, they also show which player scored and in what minute.

The most unique feature of the game is the fact that you, as manager, only have a set number of hours to perform a weekly task. Different actions take different amounts of time, and once you have run out the more important decisions not undertaken that week will

have to wait. Also new to the genre is the fact you can make two substitutions during a match, and so have a computer opponent.

Penalty shoot-outs are not often included in such strategy games, yet are two legs in League Cup competitions. Treble Champions boasts 4 divisions of 20 teams and over a one-league division of 20 teams. You can play on any of these difficulty levels, and start in any of the two divisions. Also, all of the teams have named players which you can approach with the hope of purchasing, but it must be done before the transfer deadline.

Preseason during the game is not overly elaborate, but is simple and comprehensive. There is a total transfer list signed, but on this sort of game that is common. The game is enormous and there are a plethora of options waiting to be explored.

Treble Champions is possibly the most complete football strategy game to date - which is no mean feat, I assure you. It is large, complex, and, most impor-

tantly, addictive - qualities which today's soccer games need to have. Until somebody produces an large a game, but with the capability of having such human opponents, Challenge Software is sitting on the best soccer management game, and has a bright future ahead of it.

B.B. Henderson

Challenge Software is a label for *Real-Ed Software*, a company with a very high pedigree for good quality strategy games. Treble Champions is its first retail release.

INFO

Gameplay: 50%
Graphics: 40%
Sound: 30%
Usability: 40%
Overall:

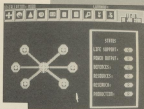
40%



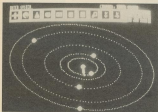
MILLENNIUM 2.2

Electric Dreams - £29.99

The predictions were right. The asteroid did collide with the Earth killing all life on the planet. As commander of the moonbase only you can save mankind.



Above: It takes a Millennium to play the game.



Left: Look there, little white blobs on my commander screen.

MOOONBASE II is a small research station with limited production and mining capabilities, a single Mark I energy unit and a population of only 100. Through careful management you must ensure the survival of the race by first establishing the moonbase and then setting up colonies on other worlds.

By clicking on the game icons you should soon be able to start up the colonies resource plant that mines raw materials these can be used by the production section to build new energy cells, probes to explore space, modules to support more people (100 each),

fighters to protect the base and bigger and better ships for the colonies into space.

Just when things seem to be going well, you receive a message from Mars claiming dominance in the galaxy and hostility against any moves you make to expand. Unlabeled, you send out probes to search the solar system for a mine or planet to colonise as, by now, Moonbase is overcrowded. Soon or late the Martians will attack and if you've researched and built fighters or orbital lasers you can try and stop them but you'll probably lose some materials and people in the raid.

Although *Millennium*

2.2 looks like a strategy game it plays like an adventure and has a series of puzzles that must be solved before you progress. These include the need for raw materials, such as copper, that can't be mined from the moon, the increasing martian attacks and the risk of mutation and alien diseases that can spread rapidly through cargo ships to your other colonies giving you a desperate race against time to research and produce an antidote.

Although this PC version lacks the graphic appeal of others it still captures the feeling of exploring the unknown and the challenge

of ensuring the survival of the race.

Tony Hetherington

INFO

Gameplay: 68%

Graphics: N/A

Sound: N/A

Lastability: 70%

Overall:

69%

Ocean - £24.95

ROBOCOP

Part film character, part arcade game, all cop. It's the man in a can, and he's gunning for you. If you've been naughty that is.

In case you've all seen the wonderfully violent film, Robocop, and if you haven't then you should jolly well do so. Well, this game is loosely based on the film as well as right on point, but rather on the arcade game than the novel.

After seeing the disappointing ST version (the Amiga one should be out now), I was dreading seeing what Ocean could do on a PC. Surprisingly, the PC version is miles better than the ST game, and authoritatively simulates the arcade game.

You play Patrolman Murphy, once flesh and blood, horribly blown to pieces by gangsters, who are now led by one of the senior officers at OCP. Murphy was strapped up, canned, and reprogrammed for law enforcement. Partly

instinct, what remains of his mind throws up images of the gang, and he sets out for revenge.

Robocop is a game of many parts and levels (nine in all), and starts by travelling from right to left, with headlines leaping onto the screen, all intent on murdering Murphy (and a tin of pork). Armed with a standard pistol, three fives, and an ever decreasing energy level, you must fight your way through, picking up ammo along the way. Later in the game you get to pick up other weapons, which you'll certainly need considering what you're up against.

At the end of the first patrol there's an almost 3-D section where you have to audit a criminal who is hiding behind a woman hostage. This is a pleasant break after the first round and a chance

to concentrate before the really offensive criminals on level two, some of whom ride motorbikes.

Level four is a photofit against the time test, with information as to Murphy's killer being the reward. After that it's killing all the way, taking out a drug factory, the giant robot ED209, and a final encounter with the mad scientist Dick Jones in the President's Office.

Robocop isn't an easy game, because poor old Murphy flinches every time a bullet hits him, and while he's doing so he can't fire back. Needless to say there are killing zones at certain points along the way where you are caught in a murderous crossfire, and have great difficulty in getting out with one left left.

The graphics and animation are pretty good which

makes up for the dire sound effects, and with these bonus style sections thrown in to break up the action, this is one patrol worth going on. **Duncan Evans**

INFO

Gameplay: 87%

Graphics: 80%

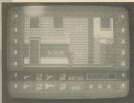
Sound: 20%

Lastability: 81%

Overall:

84%

Web sites like WBC Le Mans, Op WotK, Robocop and numerous competitions, that has been Ocean's year so far.



Above: Metallic mannequins in the spacer city.

As the sun sets Gordon Hamlett gets funky with his remote-controlled robot.

*Magic Bytes -
£9.99 Tape, £14.99 Disk.*

RECENTLY qualified from graduate school as a robotics engineer, you have just started your first job. You are working in the cybernetic control centre involved in planetary exploration.

As a beginner, you cannot expect to be let loose on the latest technology from day one. So you are given control of a second rate robot to do your dirty work. The planet to be explored is not what it seems. Real planets being a touch expensive, the company has leased an artificial one consisting of some ten different platforms. The idea is that you guide your robot over the surface trying to find the exit to the next level. Succeeded on the first five platforms and you are given control of the latest in robot technology for the next five.

The platforms consist of a series of small mazes with different areas only accessible when you have the appropriate colour coded key. There are creatures that shoot at you and hidden mines, all of which is bad news. At the start of the game, you have no defenses at all. You must find your laser and mine detector first. There are also one way escalators and transporters paid to be negotiated.

There is nothing original about *Nightdawn*. Wandering round mazes looking for different keys has been seen many times before and there is nothing extra in this game to make you sit up and take notice.

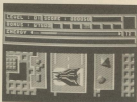
The graphics are poor - fuzzy, blurred and small. Indeed, the Amiga version was similarly disappointing

-looking more like I imagined this C64 version should look.

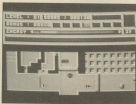
There is nothing particularly wrong with *Nightdawn*, it just doesn't generate any degree of excitement whatever. Lasting appeal is limited too. Once you have learned the best path through a particular level - where the traps are and so on, there is nothing to stop you completing that particular level again with great ease, every time you play.

INFO

Gameplay: 50%
Graphics: 40%
Sound: 30%
Lastability: 40%
Overall:
40%



Above: Ouch, what a large metallic spiral



Above: Well no large metallic spiral

NIGHTDAWN

THE STORY SO FAR

Elite - £19.99

Compilations are nothing new, and you might say nothing exciting. If you wanted to be really cruel you might also say they were cynical marketing exercises designed to tempt the 'pocket shopper' into buying what young Johnny already had anyway.

Compilations can be value for money, but looking at this one from Elite it appears that *The Story So Far* is a pretty short one. Four games is rather stingy, especially as it doesn't contain one of Elite's better games *Overlander*, or even *Line* and *Let Die* which the 8-bit packages get.

What you do get are *Buggy Boy*, *Isari Warriors*, *Battleships* and *Beyond the Ice Palace*. *Buggy Boy* was a 3-D racing game, with five tracks, and loads of obstacles rather than competing cars.

With bonus points, time gates and the ability to drive on two wheels, and then fly through the air, you can see this isn't exactly *Menace*. It is good fun though, because the tracks are graded in difficulty and even the falling reactions of this old back are good enough to complete the first three.

Isari Warriors is one of my favourites, being the first arcade Commando style game to feature simultaneous two player action. It isn't stunning on the Amiga, in fact it looks just like the ST version, but it is very playable and features tanks with which you run the goods over, as well as shooting and gonading them.

There's a lot of surface gloss on *Battleships*, but that doesn't cover up the fact

that this is a very standard conversion of the pen and paper game. I suppose it'll save a few trees, and you can play against the computer should you be so bored.

And finally off we go into arcade adventure land with vertical and horizontal scrolling, three types of weapons, dreadful sound effects, decent graphics and very rough gameplay. Just getting through the first level of *Beyond the Ice Palace* is a major achievement, and when you encounter the even harder guardians of level two you'll realise that this game has never been properly played.

Normally compilations can stand a couple of the games being soft, or if you already own one or two, but with *The Story So Far* there isn't really any margin for error, and whichever way you look, you're not exactly getting the bargain of a lifetime.

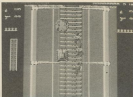
Duncan Evans

INFO

Gameplay: 82%
Graphics: 80%
Sound: 72%
Lastability: 84%
Overall:
80%

Elite Systems list the best three after running our comparing *Overlander* to US Gold's *Roadblockers*, and haven't released anything more since.

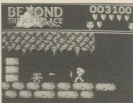
Only a compilation, or a potted history of Elite Systems work on the Amiga? Duncan Evans gives you the real story.



Above: Isari Warriors.



Above: Buggy Boy.



Above: Beyond the Ice Palace.

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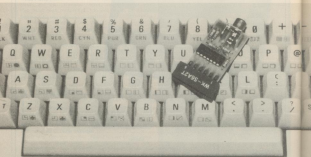
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1st CD

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Commodore 64 keep up
with the brash young
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with this CD interface
from Rainbow Arts.

EDITION



There has been a lot of speculation about what CD-ROM is going to do for the computer and entertainment industry. Gigabytes of code, film-like animation sequences stored on CD, with stirring musical scores to accompany the action.

Even now we are seeing the emergence of the new technology, witness Microsoft releasing *Defender of the Crown* on CD for connecting up to PCs. There's the PC Engine, with its CD software, and who knows that is around the corner.

Well like you I can only guess, but I'd never have guessed what Rainbow Arts was going to do. In a seemingly bizarre marketing move, the company has released the first CD-Edition. This package contains an interface which plugs into the cassette port, a CD and an instruction manual.

The interface which translates the audio output of a CD player into the audio format of the cassette port is small and fragile looking. It isn't even boxed and gives the impression that a moment's carelessness would result in it being snapped in half.

The only catch with this package is the CD player. Unless the game's on the CD, for this is a compilation, were of such brilliance that it was worth laying out £100 or so for the CD player, or you already had one, then it isn't going to be of much use.

Setting everything up is a minor hassle, simply because of the need to have all the equipment in close proximity. It says in the manual that you can use a portable CD unit just as easily, and as this is far easier to set up I gave that a go.

Plug in the interface, connect a phono plug lead from the interface to the line out on the CD player, turn on your C64 and insert your disc and you're ready to roll. Easy enough, you then just type LOAD and on the CD player in action. After about 40 seconds you should be into the main menu, and the CD player can be stopped or paused now. Also the portable CD unit didn't like working with the interface so it was necessary to hand the big unit out. Take note, if you only have a portable, it might not work.

My main unit worked fine though, and the menu offered a choice of ten games for my selection. After making a selection, the menu informs you to jump to a specific track number where the game is stored, then press space. After anything between 30 and 50 seconds later, the decompressed program is running happily and you can turn the CD player off.

This is all good and well, but let's look at what you're getting a bit closer. For one thing the loading time isn't particularly fast. In fact it's quite slow when you realise how little data is being loaded, but is comparable with today's fast loaders on the C64 disk drive.

How much room on the CD does all this take up? About 11 minutes worth, and that's padded out. To try and fill up the rest of this very empty disc, the programs are reloaded twice, simply add 20 to the track number to access them, and there is a selection of 14 music tracks by Chris Hulsebeck (who's so listen to through your amplifier. These music tracks are nothing special, and not worth buying the CD-Edition for.

The actual games, almost an oversight in this strange project are not your state of the art games. Some of them are older than my mother, but for the record, this is what you get: *David's Midnight Magic* (pinball), *Lumberhead*, *Mission Elevator*, *Impossible Mission*, *Droptops*, *Lodirunner*, *Solomon's Key*, *Jinks*, *M.U.L.E.*, and *Fist II*.

Although Rainbow Arts has been quite brave in testing the water with this package, it has cut corners as far as paying for new games and the production standards of the interface are concerned.

If you don't have a CD Player then forget it. If you already do, and you can lug it close enough to your computer then all you have to worry about is whether you really want the benefit of having ten very old games and some forgettable music on a compact disc. This isn't the technology of tomorrow, this is Rainbow Arts trying to cash in on a current fashion.

Duncan Evans



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Editor's Note

Apologies must go to Mr. M. Carroll for an error published in the August issue of Your Commodore. On page 54, we accredited Mr. Carroll's program, Disk Scrambler to S.T. Burke. Apologies all round for this error.

Software for Sale

If you think that one of our programs looks very interesting, but you can't afford the time to type it in, then our software service will help you out

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The *Your Commodore* Software Service makes available all of the programs from each issue on both cassette and disk at a price of £6.00 for disk and £4.00 for cassette. None of the documentation for the programs is supplied with the software since it is all available in the relevant magazine. Should you not have the magazine then back issues are available from the following address:

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The Disk

Programs on the disk will also be supplied as totally working versions, i.e. when possible we will not use Basic Loaders thus making use of the programs much easier. Unfortunately at the moment we cannot duplicate C16 and Plus/4 cassettes. However programs for these machines will be available on the disk.

What programs are available?

At the top of each article you will find a strap containing the article type, C64 Program etc. So that you can see which programs are available on which format, you will also find a couple of symbols after this strap. The symbols have the following meaning:



This symbol means that the program is available on cassette.



These programs are available on disk.

Please Note

Since the programs supplied on cassette are total working versions of the program, we do not put disk-only programs on tape. There is no sense in placing a program that expects to be reading from disk on to tape.

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Freddy Krueger - the man with the designer cooking utensils
strapped to his fingers - is finally to make it to the home
computer.

NEON ZONE

The man with many columns (conf), John Cook, deals
us a dose of arcade action, and explores many coin-op
locations.

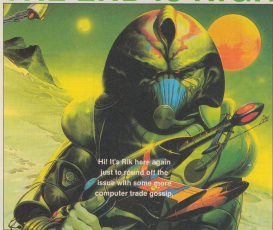
COMIC WATCH

A look at the wonderful world of men in tights, and their
related computer games.



Plus Play By Mail Games (board), More Weekly Comics,
Loadreviews, and Your Programmer...

THE END IS NIGH



Hi! It's Rik here again
just to round off the
issue with some more
computer trade gossip.

Landscape Gardening

APPARENTLY, according to a press release sitting in front of me, there is to be a new landscape for the immensely popular Populous (so popular in fact, that the ST and Amiga versions rose to 3rd spot in the 8-bit chart in Computer Trade Weekly). Originally plans were to have it based on Samurai legend, but wild and wacky Electronic Arts has a far better idea in mind.

The new landscape is now titled 'The Bit Plane', with computer print-out paper as the land, computers as the settlements (from the ZX81 to a Cray) and cigarette stubs and pencils as landscape features. To be honest, I think there's a little funk tagging going on here.

Earwig

On a charitable note, the Grandstand charity football match (which the pressies lost abysmally last year) is to go ahead, and certain companies are taking it very seriously indeed.

The charity in question is the Hillsborough disaster appeal - a charity close to my own heart due to my support for Liverpool Football Club. Some companies are taking the game so seriously that they aim to field very strong sides. One company (who shall remain nameless) have even announced that Kenny Swain (ex-Manchester City player) will be in their squad.

Let's just hope that the reason for playing is not washed over by inter-company rivalry.

Gang Bang

PSYGNOSIS has recently announced the fact that they have lost a large consignment of copies of Blood Money in a hijack of a British Lorry bound for Paris. Although the lorry contained valuable clocks and lighters, the French gang involved only stole the Amiga version of the recent game.

If you're stopped whilst strolling through the streets of Paris, and asked by a dirty French man in a brown coat smoking Gaullois, if you would like to purchase a piece of software, don't worry, he's not trying to sell you a dodgy sex aid.

I'll see ya next month...
Bill Henderson

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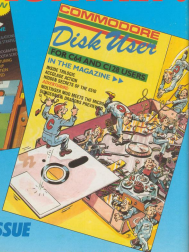
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